THE ILLUMINATING ENGINEER

LIGHT
LAMPS
FITTINGS
AND
ILLUMINATION

THE JOURNAL OF

GOOD LIGHTING

Official Organ of the Illuminating Engineering Society

FOUNDED IN LONDON 1908

Edited by
LEON GASTER

ON
GAS
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ACETYLENE
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GAS
ETC.

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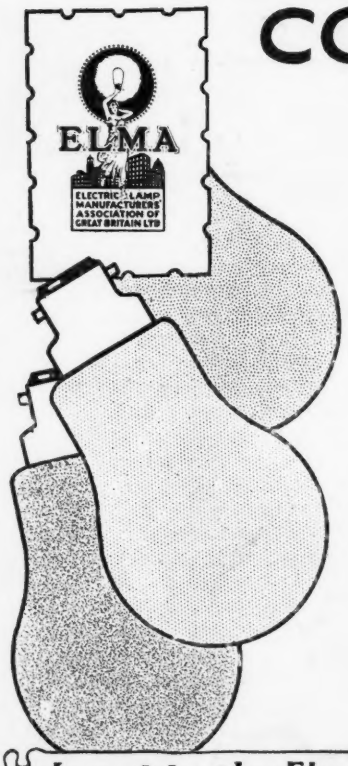
Special Features:

The Annual Meeting of the Illuminating Engineering Society—Papers read before the Illuminating Engineering Society in Karlsruhe—Lawn Tennis by Artificial Light—Notes on the Advertising Exhibition and Convention—Smokeless Laundries—The Lighting of Offices—News from Abroad, etc.

Electric Lamps and their Uses. No 7.



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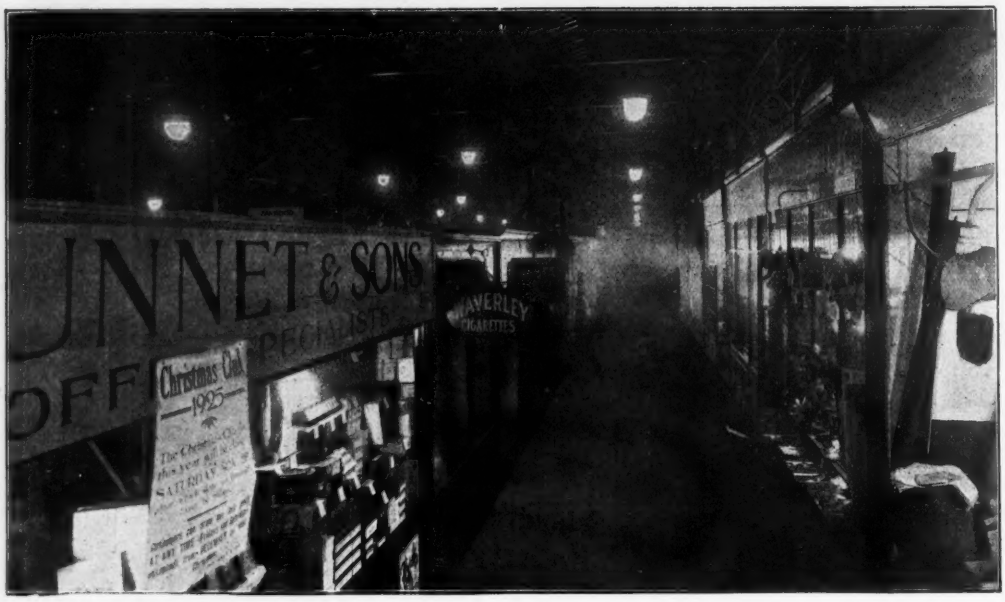

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Physiological and Æsthetic Aspects of Illumination

ON pp. 250-251 we present an account, kindly sent us by Dr. N. A. Halbertsma, of the proceedings at the annual meeting of the Illuminating Engineering Society in Karlsruhe, Baden. This is distinct from the older society in Berlin, although both are in friendly relation. It was designed to meet the needs of those in South-West Germany interested in illuminated engineering. Under the guidance of Professor Dr. J. Teichmüller it has already done a considerable amount of useful work. The choice of Karlsruhe as the centre for the Society was influenced by the fact that this city is the site of the Lichttechnisches Institut, over which Professor Teichmüller also presides—an institute which is unique in being exclusively devoted to the technicalities of optics and illumination.

Gatherings in Karlsruhe have usually been marked by enterprise in the choice of topics for discussion, a usual course being to arrange a group of papers dealing with various aspects of some special subject. On this occasion provision was made for the reading of papers dealing with physiological, psychological and æsthetic aspects of illumination, each by an expert on the aspect discussed. In his opening address Professor Teichmüller drew attention to the necessity for a wide outlook on illumination. It is inadvisable to rely exclusively on physical methods; already there is a tendency to accept photometric readings as the sole criterion of excellence, without considering how much depends on their interpretation. He instanced "glare" as a question that can only be effectively treated with the aid of the physiologist. Most of our difficulties in dealing with this trouble arise from the fact that there is not yet any ready means of determining expeditiously whether an installation is "glaring" in the sense that it causes injury or discomfort to vision.

Professor Kroh dealt with the effects of light on the eye and also showed how psychology also enters into the problem of the relation between illumination and visibility—for it is mainly by the aid of experience and deduction that we recognize the sizes and shapes of objects. Professor Hellpach, who is an eminent psychologist, raised the question whether it was desirable, even if practicable, to imitate daylight conditions exactly by night. Professor Freese, the architect who was responsible for the successful design of part of the lighting at the "Gesolei" exhibition in Dusseldorf, discussed the use of light from the architectural standpoint.

We hope in due course to receive copies of the actual papers read at this gathering in Karlsruhe. Meantime the summary furnished by Dr. Halbertsma suffices to show their exceptional interest. We wish to draw special attention to this meeting because it expressed a point of view with which we strongly sympathize. From the very commencement of the illuminating engineering movement in this country, we recognized that lighting is not a purely engineering matter, that many different experts can aid in solving its problems, and that the views of the user of light are often of considerable importance. It is for this reason that the Society in this country has thrown open its ranks to medical men, architects, inspectors of factories and other outside experts.

There can be no question that illuminating engineering has gained immensely by the development of photometry. Without means of accurate measurement no science can make real progress. But illumination is an art as well as a science. It differs radically from other forms of engineering because its sole object is to minister to the sense of sight. Hence the ideal conditions of lighting in any particular case cannot be secured merely by adherence to engineering data and formulæ. Such information, which is to be found in up-to-date lighting literature, can and does render excellent service. Yet such data are merely tools, and their successful utilization depends on the judgment and artistic instinct of the man who uses them. There are many cases in which "efficiency," in a purely engineering sense, must give way to the paramount consideration of the comfort of the eye, or must be modified in order to meet æsthetic and architectural aspects.

Similarly measurements of illumination, though in themselves valuable, do not give a complete picture of the results of a lighting installation. The manner in which the units are arranged, the presence or absence of glare, the conditions of shadow and the general impression received by the eye are often equally important.

Nor should we underestimate psychological effects, which, as Professor Kroh explained, have a great deal to do with the perception and recognition of objects, and may play a considerable part in deciding the effect of illumination on efficiency of industrial work.

We have, as yet, gone only a small way towards enlisting the aid of experts in physiology, psychology and art. The ideal "illuminating engineer" of the future must be conversant with these aspects as well as the physical side of illuminating engineering, in which such great progress has been made during recent years.

The Use of Artificial Light for Games and Sports

AT this season of the year, when there is ample daylight available, the use of artificial light for games and sports is rarely desired, but in the winter it is otherwise, and much thought has been expended on the artificial lighting of tennis courts, etc., during recent years. It may be recalled that the whole question was the subject of a paper before the Illuminating Engineering Society in 1921. From time to time we have since reported enterprising experiments with artificial lighting, and in this issue we give an account of the installation at Holland Park for the exhibition lawn-tennis matches, recently organized by Mr. Cochran.

As players are painfully aware, the chief difficulty in providing adequate artificial lighting of tennis courts is one of cost. Even assuming that technical difficulties are overcome, the running cost of such high illuminations and the consequent increased fees to players are apt to prove prohibitive. But in the case of exhibition matches, at which revenue is derived from spectators, the matter is otherwise. In such cases the cost of lighting may prove an insignificant item in the total costs of production, and there is no commercial reason why the illumination should not be as perfect as can be designed.

The most novel feature of the installation now described is the adoption of units giving a quality of light approximating to sunlight in colour. The ideal form of artificial light for ball games has not yet been thoroughly determined. High intensities of illumination, of the order of 10 to 20 foot-candles, are usually considered necessary in order to enable the flight of the ball to be followed with ease. The elimination of glare from lighting fittings is a factor at least equally important. But it is also possible, as some contend, that the colour of light deserves more consideration. Ability to sight the moving ball quickly is largely a matter of rigid accommodation; it is suggested that this process may be more easily performed with a light resembling daylight, to which the human eye is accustomed.

Somewhat similar considerations apply to the lighting of badminton courts. Indeed in this case the opportunities for artificial light are much greater, as the game is practically confined to indoor areas, and night play during the winter is quite common. Owing to the smaller area required by players the cost is less serious. Exhibition play, to which the public is invited, is frequent. We have visited some badminton tournaments where the lighting was far from ideal and there is no doubt that in many cases a considerable improvement is possible.

There remain other winter games which serve as spectacles and for which artificial light may prove useful. Professional association football matches command large "gates," and unsatisfactory visibility during the short days of winter is a frequent source of trouble. The use of white footballs has lately been discussed in the press. The success of artificial lighting for greyhound coursing tracks may lead to its installation at leading professional football clubs, especially as this might enable "replays" to be carried through at night—sometimes a consideration of importance in these days of crowded programmes. Possibly in the case of golfing championships, where a protracted programme sometimes results in events being concluded in the twilight, supplementary artificial lighting at certain points on the course may likewise prove useful.

Underwater Illumination

THE consideration of the use of artificial light for games and sports leads us to consider its application in another field, for swimming and aquatic contests. Even assuming that the lighting is carried out in the ordinary way, entirely from above, there is room for considerable skill in the arrangement of units. Such units should clearly reveal the figures of swimmers, without causing glare in the eyes of the audience, who may be stationed in galleries at a fairly high level. There is also the consideration that in this country swimming baths should usually be capable of conversion to other purposes, e.g., they may be boarded over and serve as dancing halls during the winter.

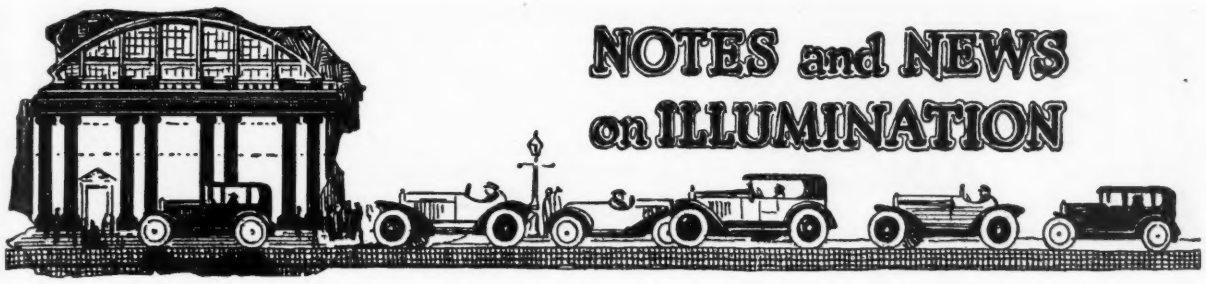
A further refinement which has recently been developed is the practice of underwater illumination. An interesting description of the application of this method in a swimming pool has recently been described by Mr. A. J. Sweet in the Transactions of the Illuminating Engineering Society (U.S.A.). The design of underwater units, situated round the edge of the bath, requires care. They must, of course, be completely watertight, and they should be so arranged as to illuminate the figures of swimmers when under water, without causing undue glare in their eyes. As a rule the adoption of this method would depend on design *ab initio*, i.e., it can be provided in a completely new installation, but is costly and somewhat difficult to introduce when the bath has been already built.

Mr. Sweet's paper is illustrated by photographs showing the appearance of the swimming bath under varied conditions. It would appear that the best effect is only obtained by a combination of overhead and underwater illumination. It is necessary to see the figure of a diver, both when poised or moving through the air and when he has plunged beneath the surface.

Obviously, underwater lighting should aid considerably to the effectiveness of displays of diving, besides conveying a greater degree of safety as the figure of the swimmer can be more clearly seen. In the case described by Mr. Sweet the arrangements appear to have been very carefully planned, attention being devoted to such points as the use of screens to colour the light under water, and the choice of colours of tiles. White tiles are considered essential for the bottom of the bath, but graded colours may be introduced in the tiles used to line the sides. One somewhat curious effect is that underwater lighting accentuates the apparent shallowness of the pool, the familiar fore-shortening effect of refraction of light by the water being emphasized.

One would expect that underwater lighting would receive more attention in the future, especially in swimming baths habitually used for championship displays. The possibilities of light in this direction are far from exhausted, as is illustrated by the "artificial riviera" projected in Berlin, where the enjoyment of bathing is heightened by special warming which enables the baths to be used in winter. Other special features reported are the imitation of natural conditions by an artificially lighted sky overhead, and the provision of a sandy beach to the water, whereon swimmers can bask, after their dip, in the rays from artificial sunlight units overhead!

One cannot help thinking that in this country more might be done to render covered swimming baths attractive, and to encourage their use during the winter season. Here artificial heating and lighting, as well as the imitation of more natural surroundings, might play a considerable part in attracting the public.



Institution of Public Lighting Engineers

ANNUAL CONFERENCE AND EXHIBITION.

Readers are reminded of the forthcoming annual Conference and Exhibition, arranged by the Institution of Public Lighting Engineers, which is to be held in Brighton during September 12th to 15th. As already announced in this journal several papers dealing with street lighting are to be read, including "Road Traffic and Public Lighting," by Mr. R. L. Matthews (Chief Constable of the City of Leeds), and an account of the public lighting of Brighton, by Mr. John Christie. A discussion on the B.E.S.A. Standard Specification on Street Lighting is to be opened by Capt. L. B. W. Jolley and Mr. R. Watson. According to the information we have received the exhibit of lighting appliances promises to be exceptionally varied this year, both gas and electric lighting being well represented.

Four-Aspect Colour Signals on the Southern Railway

In a recent paper before the Institution of Railway Signal Engineers, Mr. W. J. Thoroughgood described the electric signalling plant, including four-colour signals and electrically operated points, on the section of the Southern Railway between Cannon Street, Charing Cross and London Bridge. The four-aspect colour-signalling system has also been installed between Holborn and Elephant and Castle. Actually only three colours are used, though there are four types of signals, the four "aspects" being: *Green* for "Proceed"; *Two Yellow*, "Warning—be prepared to find next signal at caution"; *Single Yellow*, "Caution—be prepared to find next signal at danger"; and *Red*, indicating "Danger—stop." The electric signal lamps are run from a 220-volt alternating-current supply. At stations and signal boxes the light signals are semi-automatic—i.e., the signalman has ultimate control of the signal aspects, but directly he reverses the signal lever the signal is automatic, and the aspect displayed depends upon the state of the road ahead. Each of the lamps used is of the double-filament variety, so that if one gives way the other will still afford light, though of diminished intensity; the fact of the light being reduced will attract the attention of drivers, who will report. A partial failure is also indicated by the effect on a pilot lamp in the signal cabin.

It is satisfactory to note that the scheme of colours outlined above is substantially the same as that adopted by the American Engineering Standards Committee for traffic (namely red for "stop" green for "go" and yellow for "caution"). It is now being suggested in that country that the practical universal adoption of red lights at the rear of vehicles is inconsistent with the scheme. Instances are recorded of red "stop signals" at railway crossings being mistaken for tail-lights of vehicles. Something can be said in favour of a change to a distinctive yellow implying "caution."

Luminous Pavement Signs

By the courtesy of the *Electric Review* we present in the above illustration a view of the illuminated new pavement sign, in use at the Charing Cross Tube Station, to which reference was recently made in *The Illuminating Engineer*. The adoption of luminous direction signs on the floor is something new and required somewhat special design. In this case the device appears to be quite effective though one would imagine that it could not be applied in some cases owing to the tendency for the sign to be obliterated by crowds during busy hours.

The Causation of Miners' Nystagmus

It is now fairly generally recognised that the ocular disease known as "miners' nystagmus" is closely associated with the very low illuminations under which miners work. It is sometimes urged in opposition to this view that other workers in feeble light, for instance operators in photographic dark-rooms, do not appear to suffer from the disease. But, as pointed out by Mr. Parry Morton, in a contribution to *The British Journal of Physiological Optics*, the conditions in such cases are distinctly different. The miner works with a material that is almost pitch black and reflects little, even of the feeble illumination it receives. Owing to the position in which lamps are used, the eyes of miners are subjected to glare. The photographic plate maker, though he works for long hours in semi-darkness, has to deal with materials that are light in texture, and his eyes are not subjected to direct glare from the source. He usually starts work about 8-30 a.m., comes out into daylight for an hour during lunch-time, and finishes his day's work about 5 o'clock. He has thus fair opportunities of experiencing daylight. But the miner, at least during the winter, lives almost all his time in darkness. There are other special circumstances, such as the cramped position often assumed in the mines and the oblique view of the surface worked upon, which may also be predisposing factors. But no doubt one of the most important points is the combined experience of darkness and liability to glare from the exposed filament. Recent developments have been strongly towards the diffusion of light by using frosted bulbs, well glasses, etc.; experience will probably show that the consideration of avoiding glare is quite as important as securing additional illumination.

International Illumination Commission

FORTHCOMING CONFERENCE IN ITALY.

Bellagio (Lake Como, Italy) will be the scene of two important conferences this month. The International Electrotechnical Commission is holding a series of meetings, commencing on September 4th, when technical committees will deal with a variety of topics, including Nomenclature and Symbols, Rating of Electrical Machinery and Rivers, Lampholders, Traction Motors, Insulating Oils, Measuring Instruments, etc. Various places of industrial and technical interest will subsequently be visited. During August 31st to September 3rd, immediately before this gathering, delegates to the session of the International Illumination Commission will also be meeting in Congress. We understand that the opportunity will be taken to review the programme and work of the various sub-committees which have under consideration such matters as the choice of definitions and symbols, heterochromatic photometry, motor-car headlights, and the lighting of schools and factories.

Early sessions will be devoted to a general review of the future work of the Commission, on which a memorandum has been submitted by the American National Committee. There are also several special subjects suggested for consideration, such as the black-body standard of light, the comparison of samples of diffusing glass, and the study of glare.

We are also glad to see that the various specifications drafted by the committees of the British Engineering Standards Association, i.e., those dealing with electric lamp specifications, industrial reflector fittings, portable photometers, street lighting, etc., will be presented for international consideration.

On the programme there is also a series of reports dealing with factory lighting, by Mr. L. B. Marks (U.S.A.), the French National Committee, the Swiss National Committee, and others. Mr. L. Gaster is presenting a report on Developments in the Lighting of Schools and Factories in England, and Dr. Bordoni is again reading a paper on the subject of glare. In this connection the B.E.S.A. specification for industrial reflectors will also be considered. Points suggested for discussion include many of a very practical nature. No doubt the distinction between minima and recommended values of illumination will be further emphasized.

Definitions and Symbols and Heterochromatic Photometry will similarly be discussed by the committees interested. The programme in connection with automobile reflectors contains a report by Dr. Sharp (President) and contributions dealing with regulations in France and Germany, whilst Mr. L. B. W. Jolley and Dr. J. W. T. Walsh will discuss this subject from the British standpoint.

Amongst later papers of a more general character we note the following: "L'Ensignement de la Science et de l'Art de l'Eclairage" (Ing. C. Clerici), "A'Activité de la Maison Osram en Europe pour le Perfectionnement de l'Eclairage" (Ing. S. Danesi), and "Eclairement et Eclairement Apparent des Routes" (G. Peri).

It should be borne in mind that the meeting at Bellagio is essentially a gathering of members of the various committees, serving to prepare the way for the next full session, which is expected to be held in the United States. Nevertheless we understand that at this meeting more nations will be represented than at any previous gathering.

A Lighting Exhibition in Moscow

We understand that an interesting Exhibition is to be held at the State Polytechnic Museum in Moscow during the months of August to October, in which lighting will play an important part. The section dealing with illumination will include historic exhibits showing the development of the lighting art as illustrated by the work of Russian inventors; but provision for exhibits from foreign countries will also be made. Demonstrations will also be contrived to illustrate the important part played by illumination in daily life. Sections will be devoted to optical instruments, measuring instruments and the projection of light, kinematograph apparatus, illuminating appliances and systems of lighting, Röntgen ray apparatus, ultra-violet light, and optical instruments used in medicine. The Exhibition thus covers a wide ground. It will be supplemented by conferences, lectures, etc.

Illuminating Engineering in Japan

The latest issue of the *Journal* of the Japanese Illuminating Engineering Society contains a paper by Mr. E. Ogawa illustrating the special lighting service provided in connection with the funeral of the Emperor. In the illustrations we notice the same curious juxtaposition of the old and the new—ornate lanterns of traditional design side by side with modern lamp posts—previously remarked upon. There is also an account, in Japanese, of the planning of the street lighting of Osaka, and a summary by Mr. S. Seki of work with photometric cells in photometry. Mr. Seki believes that the photometric cell may prove of service in practical photometry, but it requires very careful handling, and its full application is conditional on the adoption of a suitable colour-filter. We also notice a philosophic contribution by Mr. F. Mizojiri discussing the benefit to humanity of the heat of the sun, and referring to the important part played by sun-worship in early religions.

Demonstrations of Coloured Light at Yale University

A recent issue of the *Transactions* of the Illuminating Engineering Society (U.S.A.) contains an account of a demonstration of the effects of coloured light at Yale University. About two years ago Yale received a considerable sum of money for the building of an experimental theatre and the establishment of a department of drama. On May 12th students in this department had an opportunity of witnessing a striking demonstration of the effects of coloured light, to which local members of the Illuminating Engineering Society were invited. A costume parade was staged to show the effects of coloured light on fabrics. Models in different costumes passed in succession through pools from spot-lights yielding white, red, green and blue light. The varying appearance of the dresses was most striking, and equally so the effect of the light on the make-up or face-paint adopted by actors. Other demonstrations were designed to show the effect of coloured light in causing transformations of scenery, and the building up of coloured shadows. A final experiment showed the possibilities of fluorescence under ultra-violet light; one typical exhibit being a fencing match in which the swords, gloves and shoes of the opponents were covered with luminous paint.

TECHNICAL SECTION

COMPRISING

Transactions of The Illuminating Engineering Society and Special Articles

The Illuminating Engineering Society is not, as a body, responsible for the opinions expressed by individual authors or speakers.

The Annual Meeting of the Illuminating Engineering Society

(Held in the Lecture Room of Holophane Ltd., Elverton Street, Westminster, S.W.1, at 4 p.m. on Tuesday, June 21st, 1927.)

THE Annual Meeting of the Illuminating Engineering Society was held in the Lecture Room of Holophane Ltd. (Elverton Street, Westminster), at 4 p.m., on Tuesday, June 21st, Mr. D. R. WILSON (President-elect) in the chair.

The minutes of the last meeting having been taken as read, the HON. SECRETARY presented the following applicants as Corresponding Members of the Society:—

Bouvet, A. .....Brussels, Belgium.
Hugin, A. .....Warsaw, Poland.
Heybroek, A. .....Amsterdam, Holland.
Sjolander, H. .....Stockholm, Sweden.
Stenbacka, A. .....Helsingfors, Finland.

The names of applicants presented at the last meeting, on June 14th, were read again, and these gentlemen were formally declared members of the Society.

The CHAIRMAN then called upon the HON. SECRETARY to present the Annual Report of the Council for the past session, which was as follows:—

Report of the Council for the Session October, 1926—June, 1927

Meetings of the Society.—During the past session there has been an exceptionally varied series of discussions. The opening meeting on October 26th, 1926, was, as usual, devoted to a review of progress during the vacation by the Hon. Secretary, and to the report of the Committee on Progress in Electric Lamps and Lighting Appliances, presented by Mr. J. Y. Fletcher. There was also a representative collection of exhibits of novelties in lighting, descriptions of recent lighting installations, etc.

At the next meeting, on January 11th, a paper on "Floodlighting," by Messrs. W. J. Jones, H. Lingard and T. Catten, was read. It was generally agreed that this was one of the best contributions on this subject that has been offered in this country, and the paper gave rise to a useful discussion. In view of the great interest now being taken in the applications of floodlighting in this country the paper was considered very opportune.

On February 22nd, 1927, at a meeting held at the Royal Society of Arts, attention was devoted to a subject which was last discussed before the Society in 1922—"The Use of Artificial Light as an Aid to Aerial Navigation." On that occasion a very comprehensive paper was read by Lt.-Col. Blandy, D.S.O. At the meeting in February last Mr. H. N. Green, of the Royal Aircraft Establishment, Farnborough, surveyed progress during the intervening years. The meeting was arranged jointly with the Royal Aeronautical Society, as on the former occasion when this subject was dealt with, and officers in the flying service and makers of lighting apparatus for use in aerodromes took part in the discussion.

The next event, on March 8th, was a visit to the G.E.C. Research Laboratory at Wembley, which was much enjoyed by the numerous party of members of the Society and friends who took part. Following the inspection of the laboratories there was a discussion on the standard specification for street lighting, drafted by the B.E.S.A. Sub-committee, which was opened by Mr. C. C. Paterson, the chairman of this committee. The discussion was considered a very useful and informative one, which will no doubt prove of value to the sub-committee in suggesting any possible points in the specification that many require modification or elucidation.

On March 22nd, at a meeting held at the E.L.M.A. Lighting Service Bureau, a somewhat new departure was made. The evening was devoted to a discussion on "Problems in Illuminating Engineering." On this occasion individual speakers were asked to present short contributions describing some problems met with in their experience and indicating possible solutions. Amongst the topics dealt with were "The Lighting of the Greyhound Theatre and Dance Hall" (Mr. L. M. Tye); "The Lighting of St. Sophia Cathedral" (Mr. W. Millner); "The Lighting of a Greyhound Racing Track" (Mr. H. H. Long); and "Two Problems in the Colour Lighting of Show Windows" (Mr. L. E. Buckell). Mr. A. Cunnington also contributed an account of a problem met in connection with the lighting of the platforms of a suburban railway station; and Mr. J. S. Dow dealt with "Problems in Light Projection." Interesting problems were also raised by Mr. S. G. Elliot, Mr. G. Herbert and others in the course of the discussion. It was generally agreed that this form of meeting had proved to be a useful departure, and the hope was expressed that this plan would be again adopted during the next session.

The next item, on April 26th, consisted in a visit to the National Physical Laboratory, which was attended by a considerable number of members of the Society and friends. The party was received and welcomed by the Director, Sir Joseph Petavel, and was subsequently conducted over the Photometric Laboratories, where much of the interest was to be seen. A paper reviewing the work of the photometric section of the National Physical Laboratory was read by Mr. H. Buckley. Those present expressed their great interest in this comprehensive paper, and were impressed by the evidence of the rapid development of this section of the laboratory's work.

The final meeting of the session, prior to the Annual Meeting, was devoted to a paper presented by Mr. H. C. Weston (Investigator to the Industrial Fatigue Research Board), on "The Relation between Illumination and Efficiency in Fine Work, with special reference to the Lighting of Printing Works." The paper summarized the chief features of the work done on this

subject under the direction of the Illumination Research Committee, with the co-operation of the Joint Industrial Council of the Printing Trades of the United Kingdom, with whom a joint meeting was arranged. This meeting was appropriately held in the Court Room of the Stationers' Hall on June 14th, and was attended by a number of representatives of the printing industry, some of whom took part in the discussion.

Other Events of Interest.—Apart from the meetings of the Society there has been evidence of the growing interest taken in the subject of illumination by the attendance at other meetings where this subject was discussed, as, for example, at the three Cantor Lectures on photometry, delivered by Mr. J. W. T. Walsh before the Royal Society of Arts in May. Mr. L. Gaster, who presided at these lectures, referred to the four Cantor Lectures on illumination delivered by him in 1909, the year of the formation of this Society. The fact that it is now considered necessary to devote three Cantor Lectures to photometry alone illustrates the great development of the whole subject.

Another indication of the importance now attached to the subject was afforded by the meeting of the Institution of Electrical Engineers on March 3rd, at which papers on "Illuminating Engineering," by Mr. J. W. T. Walsh, and on "The Problems of Public Lighting by Electricity," by Mr. Haydn T. Harrison, were presented. The report of the National Illumination Committee for the past year also contained evidence of the progress being made towards standardization. Reference was made to the excellent work done by the various sub-committees working under the British Engineering Standards Association. The following specifications were mentioned as having already been issued or as being on the point of completion: (1) British Standard Specification for Portable Photometers (B.S.S. No. 230, 1925); (2) British Standard Glossary of Terms used in Illumination and Photometry (B.S.S. No. 233, 1925); (3) British Standard Specification for Industrial Reflectors for Direct General Lighting No. 1 Dispersive (Vitreous Enamel) Type (B.S.S. No. 232, 1925); (4) British Standard Specification for an Illumination Fitting of Translucent Glassware for Interior Lighting; and (5) British Standard Specification for Street Lighting. It will be recalled that the first three were presented for discussion before the Illuminating Engineering Society last year, and, as already mentioned, No. 5 was very fully discussed at the meeting on March 8th in this year.

Meantime the work of the Illumination Research Committee, working under the Department of Scientific and Industrial Research, is proceeding steadily, and the following five technical papers, amongst others, have already appeared: (1) The Terminology of Illumination and Vision; (2) The Transmission Factor of Commercial Window Glass; (3) Light Distribution from Industrial Reflector No. 1; (4) Surface Brightness of Diffusing Glassware; and (5) The Measurement of Mean Spherical Candle-power.

Owing to the fact that several members of the Illuminating Engineering Society are associated both with the Illumination Research Committee and with the B.E.S.A. Committees overlapping of work is avoided, and the two organizations can aid each other. The Illuminating Engineering Society, which has representatives on these committees and on the National Illumination Committee, furnishes a platform where information can be disseminated and discussed.

In the report of progress during the vacation last year allusion was made to the prospect that the Bill prepared for consolidating and amending the Factory Acts will provide for adequate and suitable lighting in factories. The Bill recently issued makes provision for this purpose. At the annual meeting of the National Safety-First Association held on May 2nd the President, the Rt. Hon. Sir William Joynson-Hicks, Bart., referred to the prospect that the adoption of suitable safety-first measures in certain classes of factories would be made obligatory, in which case the provision of proper lighting, in the interests of safety, would doubtless be further emphasized. In the course of this address reference was also made to the forthcoming opening of the Industrial Museum, in connection with the Home Office, which will show every form of safety appliance in operation, and will also contain exhibits illustrating the principles of good factory lighting.

In addition to scientific and technical developments the popularizing of better lighting has been actively pursued by the E.L.M.A. Lighting Service Bureau and by the corresponding organizations now established in various provincial centres. The combined E.D.A.-E.L.M.A. campaign on home lighting has doubtless served to draw public attention to this subject and a detailed study of the results of the competition just concluded should be of considerable value.

Mention may also be made of the activities of the illumination societies in Glasgow and Sheffield, which have done useful educational work in the provinces. Reports of the meetings of the latter society are, by arrangement, regularly included in the official organ of the society.

Developments Abroad.—In the report of progress during the vacation presented at the opening meeting of the session reference was made to several interesting events abroad, such as the holding of the Twentieth Annual Convention of the Illuminating Engineering Society in the United States, and to the formation of the Dutch Illuminating Engineering Society last year. The former event was celebrated by a number of exceptionally varied and interesting papers, including lectures reviewing progress during the past 20 years. The Dutch Illuminating Engineering Society, under the guidance of its active secretary, Dr. N. A. Halbertsma, appears to be making good progress, and is modelled on lines closely resembling those on which our own society is framed. An indication of its activities was afforded by the special lighting exhibition recently held in Rotterdam, a description of which was kindly contributed by Dr. N. A. Halbertsma to *The Illuminating Engineer.*

The other illuminating engineering societies in Germany, Austria and Japan are also progressing and arrangements have been made to publish regular accounts of their proceedings in *The Illuminating Engineer.*

It is announced that the Executive Committee of the International Illumination Commission will this year hold a short session at Bellagio, Italy, where various problems now being studied by the sub-committees will be discussed. In view of the growing interest in illumination in all the chief countries, it is of great importance that this country should be fully represented at international gatherings, and that the Illuminating Engineering Society in this country should receive strong support and thus be enabled to interlink the developments in Europe and the United States for which it is specially adapted.

Presidency and Officers of the Society.—As already announced in the official organ the Council have unanimously nominated Mr. D. R. Wilson as President for the coming session, and feel confident that in view of the services he has rendered to illumination this nomination will receive the cordial support of members of the society. Mr. C. C. Paterson, Lt.-Col. K. Edgcumbe and Mr. L. Gaster have been nominated Vice-Presidents, and the following have been nominated to fill vacancies on the Council: Mr. J. G. Clark, Mr. A. Cunnington, Mr. W. J. Jones, Mr. J. B. Lawford, Mr. C. C. Paterson, Mr. A. G. Porri, Lt.-Col. C. H. Sylvester Evans, Mr. H. H. Thompson, and Mr. J. W. T. Walsh.*

As no other nominations were received prior to April 15th no contest is involved. The Council is glad to give effect to the desire they expressed some years ago of including in their nominations some of the younger members of the society. The number of those actively interested in illuminating engineering has considerably increased, and their fuller participation in the work of the society will be welcome. The Council is also considering the revival of a number of the standing committees, for which opportunities of useful service now exist. It is proposed to devote special attention to the question of education in illuminating engineering and the framing of suitable

* *The Illuminating Engineer*, May, 1927, p. 147.

courses for inclusion in the curricula of leading technical colleges and educational institutions.

Steps are now being taken with a view to the incorporation and registration of the society and to the preparation of suitable Articles of Association, which will be brought before members in due course.

Future Prospects.—There is a general recognition amongst all members of the society that the time is ripe for the extension of its activities in many directions. The society will be shortly celebrating its twenty-first anniversary, and the considerable amount of information acquired as a result of its past work should be brought before the public notice so that this experience may be applied more extensively in practice. The past session has been a successful one in many respects. The meetings have been exceptionally varied and well attended, the membership has increased, and the financial position has somewhat improved. But it is necessary to emphasize what has been pointed out in previous reports—that more rapid progress depends mainly on securing a larger membership and on obtaining greater financial support from those organizations that benefit directly from the educational work that the society is doing.

The Council will shortly be considering the preparation of the programme for next session, and invites suggestions from members on possible papers and discussions or on any methods by which the society can be rendered more useful to members, to the lighting industry and to the public generally.

L. GASTER,
Hon. Secretary.

Discussion

THE CHAIRMAN (MR. D. R. WILSON) said that he felt honoured by being nominated as President of the Society, in whose proceedings he had always taken a deep interest. When he looked back on the list of distinguished Presidents preceding him, he thought that some explanation was due in regard to his selection for this position. There were doubtless other members more fully qualified to be President ("No"), but it had been pointed out that in the immediate future the Society would have to consider various somewhat complex questions affecting its policy, and it was considered expedient to have as President someone who was not directly associated with any special form of lighting.

There were one or two points in the report which he desired to emphasize. One important question that would be discussed by the new Council was that of the incorporation of the Society. A society that was not incorporated was merely a collection of individuals and in the eye of the law had no co-operate existence. He had no doubt that members would agree that incorporation would definitely improve the status of the Society.

The next point was the election of new officers. He felt sure that members would approve the nomination of Mr. C. C. Paterson, Lt.-Col. K. Edgcumbe and Mr. L. Gaster as Vice-Presidents; all these gentlemen had rendered important services to illuminating engineering. It would also be observed that a number of gentlemen had been nominated to fill vacancies on the Council. Their names were familiar to members and their selection had been determined by the desire to include in the Council some of the most active members of the Society. He felt sure that their addition to the Council would assist progress in the Society's affairs. There was a general feeling that the Society would benefit if a more direct interest in its affairs were taken by members as a whole. It was common knowledge that in the past the success of the Society had depended very largely on the efforts of the Hon. Secretary, Mr. Gaster, and Mr. Dow. He thought they would all agree that the way in which these two gentlemen had kept the Society going, not only during its initial years but during a period when many societies had gone under, was perfectly wonderful. The Society owed them both a debt of gratitude, and he knew that they both desired to have the active co-operation and advice of others in the general management of the Society.

In many respects the Society was making gratifying progress, but its activities were hampered by the small income it at present received. It was evident that the prime need of the Society was a substantial addition to its membership, and he hoped that every member would do his best to induce others to join.

The following resolution was then proposed by Mr. C. C. Paterson, seconded by Capt. E. Stroud, and declared carried unanimously:—

"That the Annual Report of the Council for the Session October 1926 to June 1927 be adopted."

THE CHAIRMAN referred to the statement of income and expenditure at the end of the report. In view of the fact that the Board of Trade was to be approached with regard to the incorporation of the Society, it was expedient that the accounts should be audited by two members of the Finance Committee which, during 1926, went very fully into the finances of the Society. It was suggested that this should be done by Mr. J. Eck and Mr. S. H. Callow, and that in the meantime the statement should be accepted, subject to audit.

MR. C. W. SULLY enquired whether it was not necessary for the accounts to be audited by a chartered accountant if they were to be brought before the Board of Trade in connection with the incorporation.

CAPT. W. J. LIBERTY explained that until the Society was actually incorporated it was quite competent for any

APPENDIX

Illuminating Engineering Society

(Founded in London, 1909).

Statement of Income and Expenditure for the Year 1926

ACTUAL INCOME.

Subscriptions*—	£	s.	d.
Members (£2 2s. 0d.) ... ... } Associates (£1 1s. 0d.) ... ... }	335	3	0
Sustaining Members (Special Contribution) ...	180	0	0
GRAND TOTAL	£515	3	0

* Outstanding for 1926, estimated ... ... £54.

ACTUAL EXPENDITURE.

General Office—	£	s.	d.
Salaries: Junior Clerk (part time)	78	0	0
Rent	60	0	0
Postage, Telephone, etc.	40	0	0
Stationery and Printing (cards and advance proofs of lectures, etc.)	60	0	0
Total	£238	0	0

Special—	£	s.	d.
Transactions (Contributions to *I.E.* at £25 per month (on account)	200	0	0
Rent of Lecture Hall, Lantern Operator and Shorthand Reporter	24	0	0
Refreshments (Hospitality to Lecturers, Travelling Expenses and Petty Cash) ...	16	0	0
National Illumination Committee	32	0	0
Travelling Expenses to other countries and towns	10	0	0
Total	£282	0	0
GRAND TOTAL	£520	0	0

member of the Finance Sub-committee to audit the accounts.

In these circumstances it was agreed that the Balance Sheet as presented should be adopted.

MR. L. GASTER then made a few remarks on the financial position of the Society. In order that the position should be fully explained he had prepared a statement, based on the recommendations of the Finance Committee, showing not only the present income and expenditure of the Society, but also the minimum expenditure which was considered essential in order that the work of the Society should progress and expand as rapidly as they desired. At present the Society was being run at an expenditure of only £500 per annum, which he thought must be unique in view of the great amount of work that had been done. The desirable income specified, about £1,000, was still very moderate, and was in fact still only one-sixth of the income of the Illuminating Engineering Society in the United States.

It had been asked, how was it possible for the work of the Society to be carried on at the present low expenditure? This was due to several fortunate circumstances. It would be observed that the Illuminating Engineering Society in this country depended on voluntary effort and paid nothing for secretarial salaries, and other customary expenses. The other factor which had rendered possible this economical procedure was the arrangement by which the Society was freed from the cost of publishing transactions, as its proceedings were published in its official organ, *The Illuminating Engineer*. The Illuminating Engineering Publishing Co. Ltd., which was responsible for the publication of the journal, had, in fact, aided the Society very considerably throughout its early years of existence. During 14 years the total expenses of the Society had not exceeded £2,000, whereas under ordinary circumstances the actual expenditure during this period would have been £24,000.

Nevertheless the Society was not expected to make good these advances. The arrangement with the Illuminating Engineering Publishing Co. Ltd. provided for a payment of £25 per month for six pages to be devoted to Transactions. As the Society expanded £5 would be paid for each additional page required. It had also been the arrangement, since the start of the Society, that one half of each subscription received should be paid to the Illuminating Engineering Publishing Co. Ltd., but it would be readily understood that the amount that the Society could pay under these heads did not go far towards covering the cost of publication.

He and Mr. Dow had given their services free to the Society since its inception, and they would continue to do their best, if this was the desire of the Society, to assist it towards greater prosperity. They did not themselves desire to receive anything for this work, which they regarded as a "labour of love." But they both felt that after 18 years it was desirable that much of the detail work should be entrusted to assistants, so that they could be free to devote themselves to more important affairs. The engagement of a paid assistant was one of the items included in the scheme, based on an annual income of £1,000. He could assure members that this amount would be well spent, and that for this sum the Society would do as much as some bodies with much larger income.

The question they had to consider was how this additional income could be obtained. In the first place they needed, as the President had remarked, a much greater membership. In the second place it was suggested that those who benefited from the illuminating engineering movement, might, by paying a special contribution, become "sustaining members," providing a supplementary income on which the Society could rely in order to extend its good work.

Generally speaking progress during the past two or three years had been encouraging. The Society had gained in reputation and done much useful work and during this period had added 80 new members to its list. But the still more rapid progress which they all desired was conditional on increased support.

MR. C. W. SULLY expressed his appreciation of the Hon. Secretary's comprehensive and generous statement. There was one little point in the accounts he would like elucidated. Under the heading "Transactions" he observed a payment of £200 "on account." Did this imply that the Society owed money for 1926 to the Illuminating Engineering Publishing Company?

MR. L. GASTER said that strictly speaking this was the case, as the full payment would be £25 a month, i.e., £300 per annum. If the funds warranted it the full amount would be met but the publishing company would make no claim on the Society.

THE CHAIRMAN pointed out that if the income of the Society could be doubled it would put quite a different complexion on the affairs of the Society. The number of applications coming in was an encouraging sign, but he again urged members to do their best to induce others to join.

MR. L. E. BUCKELL remarked that one of the essential features of the American Illuminating Engineering Society was the existence of many local branches and chapters. He suggested to the Council the desirability of initiating this departure during the ensuing year. A society confined to London only would naturally remain limited in membership. He believed that in America the membership had increased rapidly after the local branches were started. He could see that there were difficulties, but he hoped that the question would be considered.

MR. L. GASTER said that the initiation of local branches was one of the projects provided for in the scheme recommended by the General Purposes and Finance Committee. But it was evident that the starting of such a scheme involved much labour and some expenditure. If the requisite support and assistance could be obtained a start would be made. In regard to membership the Society did not compare so badly with societies in other countries, bearing in mind the populations. The United States was a large country, with many concerns interested in lighting. But it would be observed that during 1925 its membership of about 1,600 was made up as follows:—134 "sustaining members," 1,088 "associates," and only 400 ordinary members. It was the sustaining members who contributed the greatest proportion of the revenue.

Captain W. J. Liberty suggested that the nature of the "sustaining members" and the voice they had in the administration of the Society would require very careful consideration.

In reply to a question regarding the election of new members to fill vacancies on the Council, the Chairman pointed out that the adoption of the Annual Report implied the acceptance of these names. As no alternative names had been presented, and all those approached had consented to serve, the election was complete.

MR. C. W. SULLY suggested that it was expedient to pass a formal resolution accepting the nominations, and the Chairman agreed to this course.

MR. SULLY formally proposed the election of the gentlemen specified in the Report of the Council and this resolution was carried unanimously.

On the proposal of MR. J. ECK the following resolution was then put to the meeting and carried with acclamation:—

"That this meeting tenders a cordial vote of thanks to the Officers and Council of the Society for their services during the past session."

MR. L. GASTER briefly responded to this vote of thanks. The Council were very glad to feel that their efforts were appreciated and that they had the confidence of members. There had been much discussion about the future of the Society, but he was glad to feel that any misunderstandings that had occurred had now been cleared up, and that they could all work unitedly for the future prosperity of the Society.

MR. J. ECK then said that he wished to propose a special vote of thanks to the Hon. Secretary, who was attending to the affairs of the Society every day, and whose labours were incessant. Mr. Gaster was regarded as having made the Society, and its members owed him a very great debt of gratitude. He had shown great perseverance and devoted all his efforts to the cause and to the problem of obtaining financial support,

and had never been tempted to give up even when years of work seemed to produce only very moderate results.

The President said he did not think that this proposal needed seconding. He felt sure that all present would wish to support the vote of thanks to Mr. Gaster. (Applause.)

MR. L. GASTER said that he was the more grateful for this vote of thanks because it was expressed by Mr. Eck, one of the very first members of the Society who had himself devoted much time and effort to its affairs. Naturally it would have been impossible for him and Mr. Dow to have done what they did without the support of the Council, which had stood by them and were looking very closely into affairs in order to see how the position of the Society could be improved.

In conclusion CAPT. W. J. LIBERTY proposed a very hearty vote of thanks to the President for occupying the chair. Mr. Wilson's services to illuminating engineering were well known, and he had also been assiduous in his attendance at Council meetings, at which his advice and guidance had proved extremely valuable.

This vote of thanks having been carried with acclamation, MR. D. R. WILSON briefly responded. He pointed out that ultimately the success of the Society depended upon the efforts of the members as a whole, as well as the services of those on the Council. He hoped that during the next session all members would make a special effort to attend Council meetings regularly. The prospect was encouraging and he was glad to see such a good attendance of members at this Annual General Meeting. He looked forward to being able to present a record of still greater progress at the end of the next session.

Demonstrations of Effects of Coloured Light

Following the annual meeting, those present adjourned for light refreshments, after which a demonstration of novel effects and applications of coloured light was given in the small theatre fitted up for this purpose by Holophane Ltd. This space has been ingeniously adapted for the display of various colour effects. Some of these effects have already been described in *The Illuminating Engineer*,* but to many of the audience they were new and were watched with close attention. Holophane prismatic colour units are mounted in recesses in the ceiling, and their colours can be varied from the controlling switchboard. Battens of coloured lights, likewise under control, are mounted in slots in the ceiling so that their effect on wall patterns can be demonstrated. At the further end of the room is a small stage where applications of coloured light for the theatre and the kinema hall can be displayed.

Mr. R. G. Williams, who was in charge of the demonstration, first of all illustrated the application of the Holophane "Duo-Phantom" batten, which can be operated from the floor of the stage or just above the stage level, and with which striking colour transformations can be effected. The effect was first shown by the changing appearance of the coloured silk curtains covering the stage. Subsequently it was shown how a person with a face painted red appeared almost normal in red and orange light but became a "nigger" when the green light was turned on.

Similar colour transformations in connection with the designs stencilled on the sides of the theatre were shown. The striking alterations in the appearance of these decorative patterns as the ceiling lights were manipulated were instructive; here again it was shown how, by artful selection of the picture and the quality of light striking it, scenes can be entirely changed and figures caused to "stand out" or disappear.

Such devices have obvious applications in kinema theatres, where some form of "colour interlude" is often required in order to amuse people during intervals between films, and afford a period of relaxation to the eyes. An even more effective example of such colour changes was afforded by the progressive change in appearance of a desert scene. As the lights were altered one saw in succession the change from noonday to sunset, the appearance by moonlight, and the gradual coming of dawn and sunrise—a very beautiful effect, the success of which depends mainly on the very gradual changes in the colour of the incident light which the "Duo-Phantom" arrangement makes possible.

Finally, it was shown how colour may be of service in the form of superimposed light whilst a film is in progress.

Changes in the colour of light of a film picture can, of course, be made by inserting coloured gelatines in the path of the beam of the projector. But such colour changes cannot easily be made gradual and progressive, as is possible when the light is projected on the screen independently by means of the "Duo-Phantom" device. Superimposing coloured light in this way naturally diminishes the contrast of the picture; but it is considered that this is no drawback, but rather an advantage, as the contrasts in many films are apt to be excessive and fatiguing to the eye. The additional coloured light can be gradually varied in hue in order to emphasize the action of the film and afford a pleasing variation. It is also possible by this means to produce a coloured border to the picture—an effect which is again advantageous in lessening the contrast between the film and its immediate surroundings. It was also explained that the superimposing of colour tends to give "depth" to the picture.

A final demonstration took the form of a full-sized model shop window in the main showroom, which was equipped with complete colour-changing illumination on the Holophane system. Here again the special apparatus provided enables the hues of the light to be changed very gradually, in a manner impossible with the ordinary simple flashing devices.

All these demonstrations were witnessed with great interest by members of the Illuminating Engineering Society and friends, and, in conclusion, a very cordial vote of thanks was accorded to Holophane Ltd. for their hospitality. The President (Mr. D. R. Wilson), in proposing this vote of thanks, referred to the important part now played by colour in illuminating engineering, as illustrated by the many charming and instructive experiments which they had witnessed.

* *The Illuminating Engineer*, February, 1927, p. 60; March, 1927, p. 82.

Reflections of Lights in Wet Streets

A correspondent in Holland mentions a difficulty experienced in street lighting—the reflection of street lamps in the wet, smooth surface of asphalted roadways, which have proved very troublesome to drivers of motor vehicles, and are believed to have been responsible for several accidents. This point has not often been raised, but may prove a real difficulty with modern methods of road surfacing which are smooth and dark in texture. Such reflections are most likely to prove troublesome when lamps are mounted over the centre of the road, being thus in the direct line of traffic. This is apparently one drawback to central suspension, which has otherwise considerable advantages. In this instance the trouble seems to have been accentuated by the fact of lamps being mounted at a relatively low level; it is less likely to occur when the lighting units are 20 to 30 feet high. Glare arising from reflections of the lighting units in the wet surfaces of streets can be mitigated by the use of diffusing glassware, but in cases where it is liable to prove a real difficulty it would perhaps be better to adopt the method of mounting lamps at the sides of streets.

It has sometimes been argued that the formation of bright areas on the roadway due to the reflections of lights in wet weather is helpful, because it enables objects to be seen by silhouette when they are not rendered very visible by illumination. A diffused illumination over the roadway may be useful in this respect; but reflections of light sources are apt to cause glare, and thus prove the reverse of helpful. It would be interesting to hear the views of public lighting engineers in this country on this point. As is well known, many of the streets in the City of London are lighted by central suspension, but we are not aware that reflections of lights have proved troublesome.

The Sixth Annual Meeting of the Illuminating Engineering Society of Karlsruhe (Baden)

By Dr. Ing. N. A. HALBERTSMA

THE Illuminating Engineering Society of South-Western Germany, which is located at Karlsruhe in Baden, was founded in 1920, and is distinct from the elder German Illuminating Engineering Society of Berlin.

Although in the course of time friendly relations have been established between these societies and groups in other parts of the German Republic, work is carried on independently, the distance between the centres of illuminating engineering—Karlsruhe and Berlin—being too large to permit an intimate personal contact and the interchange of experience between the members.

In spite of a less numerous membership, the work of the Karlsruhe society compares well with that of the larger society in Berlin, and the annual meetings at Karlsruhe have always proved very attractive for the members of our profession, both on account of the large variety of subjects treated and of the profound scientific character of the papers.

Two other reasons should be mentioned, which have invariably contributed to the success of such meetings—the influence of the staff and students of the illuminating engineering laboratory of the Karlsruhe Polytechnic—and the personal ability of the Chairman, Professor Dr. Teichmüller, in introducing the subjects and guiding the discussions, so as to obtain positive results and consequently give satisfaction to all attending.

The idea of devoting the annual gathering to some distinct subject has proved a very happy one. This procedure directs the minds of all present towards this subject and assures a very complete treatment.

Undoubtedly the subject of this sixth annual meeting—the physiological, psychological and æsthetic fundamentals of illuminating engineering—was a most important one. We may all agree that our knowledge of these important factors is not as fully developed as our technical knowledge of illumination. Illuminating engineering cannot be treated merely from a physical and a mathematical point of view, as the eye is the receiver of the visual impressions and the brains are transforming these into the sensation of perceiving objects and colours.

Physiologists and psychologists have done very valuable work in this field, but they have remained unconscious of the practical needs of the illuminating engineer, whereas the last named had never understood the language of the workers in the neighbouring fields of science.

Professor Teichmüller has been very successful in having several papers presented at this annual meeting by lecturers who were not only experts in their own field of studies, but who also understood the more difficult art of presenting their knowledge in a popular but scientific way.

The papers will be reproduced in full in the illuminating engineering periodicals, and it will be very interesting to read them over again. It would be impossible to enter into details in this report, yet we will try to give some general impressions about the scope of the subjects and the way in which they were treated. Such impressions, however, cannot give due credit to each of the contributors, and we feel obliged to apologize beforehand to the authors.

Professor Teichmüller, in an interesting address, explained the reasons for the choice of the subject. One often finds that the physiological side of illumination is duly taken into account by using the eye in photometry, instead of applying a physical method of measurement. The eye, however, merely acts as an indicator to show the equality of two fields of brightness, and photometry cannot tell anything about the value of light as an illuminant from the physiological and psychological side. It may sound like a paradox, yet it is true, that the development of illuminating engineering which was handicapped by lack of photometry some 15 years ago is now suffering from an overestimation of the importance of photometry.

As another example of the lack of physiological knowledge Professor Teichmüller cited the glare problem. Instead of stating clearly that glare is the predominant factor which influences good and clear vision, and which is present in some form or other in nearly every lighting problem, it is generally stated that glare is to be condemned from an hygienic point of view, leaving it to the individual to study what is really meant by hygiene.

Such statements show that the illuminating engineer, as a rule, is utterly helpless whenever he is faced by problems with a physiological and psychological aspect—and nearly all lighting problems present such aspects.

Professor Kroh gave a general indication of the various phases of vision, from the formation of a physical image on the retina, through the excited visual nerves—a physiological phenomenon—to the production of the sensation of vision in the brains, which is the ultimate psychical process.

The defects of vision caused by physical causes in the eye are best known. They can be corrected, with comparative ease, by physical instruments, as glasses, prisms, etc. These defects are in the main independent of the lighting conditions, although bad lighting may contribute to defective eyesight.

The adaptation of the eye, on the other hand, is a physiological process in the retina—apart from a limited amount of protection as offered by the contraction of the iris diaphragm. As we have no physiological means at our disposal to accelerate the speed of adaptation, we have to plan our lighting in such a way as to cause gradual differences of brightness, and so facilitate the adaptation.

Here we meet the bad influence of excessive contrasts on vision; other cases may be mentioned. Although the retina can keep differences of colour and brightness distinct, its capacity in this respect is not without limits. Any strong impression will affect neighbouring elements of the retina, which explains the effects of irradiation and of glare. Irradiation, a physiological effect, is counteracted by the psychological phenomenon of increased contrasts. Tests showing the increase of contrasts of brightness and colour in adjacent fields are generally known, but we seldom realize that these effects compensate in a wonderful manner the bad influence of a moderate degree of glare on vision.

Professor Kroh also mentioned the vision by the peripheric elements of the retina, which can never be distinct, but which is highly important nevertheless, because it gives a warning against objects approaching and makes the eye turn its more sensitive region towards the source of danger. The importance of this function of the eye will be fully realized in this age of motor-cars, tramways and motor-cycles.

Among the psychological phenomena of vision Professor Kroh specially mentioned the transformation of the sensation of colour, forms and size. The colour of daylight may change considerably and thereby influence the colour of all objects in our surroundings. Yet we do not realize this until the change has become very considerable (e.g., at sunset). This transformation enables us to recognize colours provided we have known them for a long time before. This shows that the need for artificial daylight is justified, e.g., for articles of fashion, where colours are never constant.

Similar observations can be made regarding the size of objects, which we see under very different visual angles. Yet, if we have seen these objects before, or if we have another basis of comparison, we can estimate their real size fairly well.

It is a bit of good luck for mankind—as Professor Kroh explained—that our vision is not purely on a physical basis, for we would then experience considerable difficulties in identifying objects and colours. Physiological and psychological phenomena should not be looked at by the engineer as a complication of vision, but as a powerful help. The engineer will be most successful in his lighting schemes if he can make these phenomena his allies, instead of neglecting them and making them his enemies.

Professor Hellpach, who has made special psychological studies on the development of the human society, and who, some years ago, was a candidate for the presidency of the German Republic, was a very fascinating speaker. Starting in an unobtrusive way with historical facts, he succeeded in showing some general laws, which have also been followed in illumination.

Of the elementary perils which mankind had to overcome, such as hunger, cold, darkness, risk of life, darkness was the last to be mastered. For instance the Romans built very ingenious heating systems, and they had a highly developed technique of cooking meals, yet their lighting was still very primitive. At last lighting was developed in a remarkable way. The complaint may be made that much had been done to increase brightness, but little to avoid glare. But Professor Hellpach pointed out that in traffic also *speed* was first obtained, and afterwards only *safety* was developed.

Another question which is often discussed was dealt with by Professor Hellpach; is it desirable to make our artificial light as much alike to daylight as possible? The lecturer's answer was in the negative. He considered the difference of hue between daylight and artificial light as favourable to the retina. The same applies to the difference of intensity. If we were, through the whole day and for a good deal of the night, exposed to daylight intensities, the apparatus of vision would not get sufficient rest. Artificial daylight, if used during the evening, would take away the possibility of concentrating our minds in the atmosphere created by a single portable lamp. It would, moreover, prove very disadvantageous to the complexion of ladies, and this fact only might suffice to cause its failure!

For advocates of uniform illumination it would have been most interesting to hear Professor Hellpach's remarks on the grading of illumination, viz., on the importance of creating centres of light, which may act like the cell in which the monk finds the restfulness of his soul after having retired from the troubles of life.

Such remarks of Professor Hellpach linked his paper to that of the next lecturer, Professor Freese, who, as an architect of the city of Dusseldorf, was responsible for the design of part of the Gesolei exhibition, which has recently been mentioned in the *Illuminating Engineer*.* Professor Freese, having watched with great interest the latest developments of illuminating engineering and notably Professor Teichmüller's ideas on the "architecture of light," sought to compare this development with the fundamental principles of architecture, to which he adhered. As an architect he preferred to start with daylight, which, however, showed a very different character in southern countries, where the shadows are most important, from that in northern, less sunny countries, where the silhouette is the more important element of architecture.

Artificial lighting presented the difficulty that the principles of daylighting could not be conveyed by it. Yet, when seeking for new solutions, one should never use the effects of light to dissimulate the true nature of the materials used in lighting.

These brief notes may serve to give a general idea of the valuable contributions to this annual meeting of the Karlsruhe Illuminating Engineering Society.

It may be anticipated that further researches in this field will be carried out with the collaboration of Professor Teichmüller and his research students at the Karlsruhe Illuminating Engineering Laboratory, and that future annual meetings will be equally interesting.

* *The Illuminating Engineer*, December, 1926, page 351.

The International Conference of the Press

A few words may be said regarding an important event that occurred last month, the International Conference of the Press, which witnessed the rebirth of the *Union Internationale des Associations de Presse*. The arrangements were made under the auspices of the British International Association of Journalists, whose Hon. General Secretary, Mr. L. Gaster, also acted as the Hon. General Secretary of the Congress. Mr. L. Gaster has now been created a Vice-President of the *Union Internationale*. A striking feature was the representation and co-operation, on the Congress Committee, of all the leading journalistic bodies in the country; it is surely the first time on which all these bodies have thus combined for a common object. This is the first occasion on which this Association has met since the war, and it was fitting that the gathering of journalists of all nations should take place in London, where the last general Congress was also held. Twenty-three nations were represented amongst the foreign journalists, over 100 in number, who attended, and who themselves represented organizations with a membership exceeding 20,000. The total number of members attending the conference exceeded 400.

Visitors were entertained in a very hospitable manner, and we are glad to think that they will all carry away pleasant recollections of their visit. The chief items included luncheons given by the Foreign Office and at the Guildhall, a dinner given by the British International Association of Journalists, and visits to Port Dunlop, Bournemouth, and other places of interest.

In the speeches delivered at the various functions frequent reference was made to the primary aim of the Association—the cultivation of friendly intercourse between journalists of different countries. Interesting papers were read in the course of the Congress, and useful work was done at the sessions devoted to journalistic affairs. But the most valuable feature of the Congress was doubtless the friendly relations established as a result of the excellent social programme. The cultivation of mutual knowledge and good feeling in this way is of the utmost importance, not only to the journalistic profession, but as an influence tending towards the preservation of the peace of the world.

Annual Report of H.M. Chief Inspector of Factories for 1926

As we go to press the above Report has been issued, and we must postpone full comment thereon until our next number. We are glad to observe, however, that special attention is devoted to lighting. Reports from a number of inspectors, describing defects in lighting and methods of remedying them, are quoted. As a whole, the reports illustrate the tendency towards constant improvement, and the desire of manufacturers to obtain up-to-date and efficient lighting. One interesting point brought out in the remarks of Mr. Werner (Midland Division) is the preference still expressed by workers in certain processes for individual local lights. Reference is also made to the increasing use of "artificial daylight" in the worsted-spinning mills at Halifax, and to the problems involved in the lighting of printing works. A specially striking installation is that described by Mr. P. Phillips (Liverpool)—a clothing factory where overhead lighting, supplemented by small local lights for each sewing machine, has been adopted.

Mr. Brown (Scotland) emphasizes the great importance of good lighting in foundries, owing to the absorption of light by dark surroundings. He also mentions the case of a large firm of rubber manufacturers which, by installing better lighting, increased the output by amounts varying from 7 to 16 per cent.

Further Notes on the Total Eclipse

Following the note on the total eclipse, which appeared in our last issue, we have received communications from a number of our readers on this subject. Mr. R. G. Tyler (of Messrs. Tyler & Freeman) sends us a snapshot taken during the eclipse in Inverness-shire. At this spot the eclipse was, of course, partial. Even so, Mr. Tyler states that the effect was very striking The photograph shows a good cloud landscape, the chief feature being the bright sky and sun shining on distant water, whilst the country near at hand was wrapped in gloom.

Records of observations by four observers are also sent to us by Mr. R. C. Hawkins, District Engineer to the Electric Lighting Service Demonstration Bureau for the North-Western Province. The figures are grouped below. Mr. Hawkins himself was at Didsbury (Manchester). The lowest reading in this case was 3 foot-candles. Miss G. E. Jones (at Burnage, also in Manchester) obtained a minimum of 0.5 foot-candles; whilst Mr. Eastman (at Wallasey) recorded a minimum of 1 foot-candle. All these observations were made at places where the eclipse was only partial, though not very far removed from the belt of totality. As might be expected, owing to variations in local cloud conditions, the minima vary considerably. All the records, however, illustrate the rapidity with which illumination may vary during an eclipse.

	Time a.m.	Foot-Candles		Remarks
SOUTHPORT	5.0	24		Cloudy
Observer:	5.30	60		Sunshine
Mr. J. E. Guthrie Oliver	5.45	80		"
	6.0	80		Slightly obscured
Instrument Used:	6.5	70		" "
F.C. Meter No. 6592	6.10	60		" "
	6.15	54		" "
	6.20	20		
	Before totality	7		
	Totality	·02		(Slight haze all the time—said to increase diffusion of light from corona)
	After totality	5		
	6.30	60		
	6.45	75		
	7.0	75		
	7.15	95		
WALLASEY	6.0	100		
	6.6	75		
Observer:	6.15	55		Cloudy
Mr. Eastman	6.20	30		First glimpse of sun 6·45
	6.23	5·5		
Instrument Used:	6.24	1		
Holophane Lumeter	6.25	3		
BURNAGE (Manchester)				
Observer:				
Miss G. E. Jones	6.8	45		Cloudy all the time
Instrument Used:	6.22	1		
F.C. Meter No. 6074	6.25	·5		
		(A)	(B)	
DIDSBURY (Manchester)	6.10	90	100	
	6.15	10	9	
Observer:	6.20	6·5	6	
Mr. R. C. Hawkins		4	4	Cloudy
	6.25	—	3	First glimpse of sun 7·15
Instrument Used:	6.30	20	20	
(A) F.C. Meter No. 6768	6.35	57	60	
(B) Holophane Lumeter No. 474	6.40	—	106	
	6.45	—	100	

The most interesting set of readings is that obtained by Mr. J. E. Guthrie Oliver, who was stationed at Southport, where the eclipse was total. We understand that the illumination at this spot remained almost constant for a period of about 20 seconds, whereas in Manchester it remained near the maximum for only two or three seconds. The extremely low value recorded, 1/50th foot-candle at the moment of totality, is remarkable, and the eclipse at this point must have been an impressive sight. (We understand that other observers at the centre of the belt of totality have also obtained a minimum reading of about the same order.)

Visual Perception and Visual Memory

Some curious points in connection with visual perception and visual memory were raised in the fourth foundation lecture of the British Optical Association, recently delivered by Professor T. H. Pear at King's College. The first part of the lecture dealt with the familiar "after-image," which occurs when anyone looks fixedly at a brightly illuminated design for some seconds and then transfers his gaze to a white sheet of paper. The production of an after-image of a coloured object, which appears in colours complementary to those on the original, is a well-known popular illusion. The duration of the after-image also depends upon the brightness of the object seen; illuminating engineers have therefore sometimes used the after-image as an indication of the presence of glare.

But according to Professor Pear, other forms of images may occur. He quotes from a recent work by Professor Jaensch, of Marburg, to show that certain persons (a small percentage of adults but a high percentage of children) have the power of forming an "eidetic image," i.e., they can project outwards upon a screen a memory of something recently seen. The image may rise involuntarily, and appears quite real; it is quite distinct from the after-image, referred to above. This eidetic image is again distinct from the "memory image," which is formed in the mind, but is not projected into space. It would seem that sustained concentration of thought on some object may occasionally produce an actual impression of visibility. The effect no doubt helps to explain the hallucinations and visions characteristic of emotional periods, such as some of those reported during the war.

Such phenomena are of considerable interest to illuminating engineers, especially in connection with observations at very weak illuminations, when the eye is readily deceived. The strange episode of the "N" rays, at first reported by many observers but ultimately discredited, was a case in point.

POPULAR & TRADE SECTION

COMPRISING

Installation Topics—Hygiene and Safety—Data for Contractors—Hints to Consumers

(The matter in this section does not form part of the official Transactions of the Illuminating Engineering Society; and is based on outside contributions.)

The Lighting of Offices

THAT good lighting in factories is a most remunerative form of investment is now an established fact. Production is increased and wastage due to accidents and other causes is greatly reduced. With certain modifications arising out of the different circumstances these benefits are equally prevalent in a well-lighted office.

Here the results of good lighting are an improvement, not merely in the quantity of the work, but especially in its quality, for it reduces mistakes in copying, checking, reading, etc., so that the work runs more smoothly than where the office is badly lighted. Supervision and general administration will be made easier with the result that a better feeling will exist throughout the office.

This will be still further assisted by the reduction in mental fatigue, and consequent irritability, that is effected by judicious illumination.

Put briefly the essentials of good office lighting are as follows:—

1. There must be sufficient illumination on the working plane.
2. Shadows should be avoided both from the building and also from the worker's own body.
3. Glare and consequent eye-strain must be eliminated.

The lighting of a large number of offices at the present time is out of date, and one still finds old fittings in use which were installed in the days of the carbon lamp now equipped with the new gasfilled lamps. These old local lighting units make no pretence to efficiency and do not direct the "raw" light of the lamp in a proper manner. The following faults are most general:—

1. Lamps are placed too low.
2. Too numerous.
3. Prevalence of glare.
4. The light is badly distributed.

It is suggested that for general office work an illumination of eight foot-candles is sufficient, but under some circumstances this value may well be exceeded. Light, in order to be effective, must be under control, and the units should be so spaced that objectionable shadows are avoided. It is found from general experience at the present day that all these conditions can be adequately fulfilled by the use of good overhead lighting in suitable diffusing equipment, and the improved efficiency of lamps and the reduction in the price has made the adoption of high intensity general illumination an economic proposition.

In addition to the discomfort caused by the direct glare from the lamp itself a worker using polished surfaces such as glazed paper often experiences annoying reflected glare. This form of glare is most objectionable since the eyes are particularly sensitive to light from below, and the nature of the worker's task compels him to direct his eyes constantly in this direction.

A brief review of the different systems of office lighting in use at the present day will not be out of place here. The usual division of lighting units is into three groups as follows:—

1. Direct 2. Indirect. 3. Semi-Indirect.

The fact that the glare and hard shadows are to be avoided requires little explanation, and the annoyance of casting dark shadows on the work is self evident.

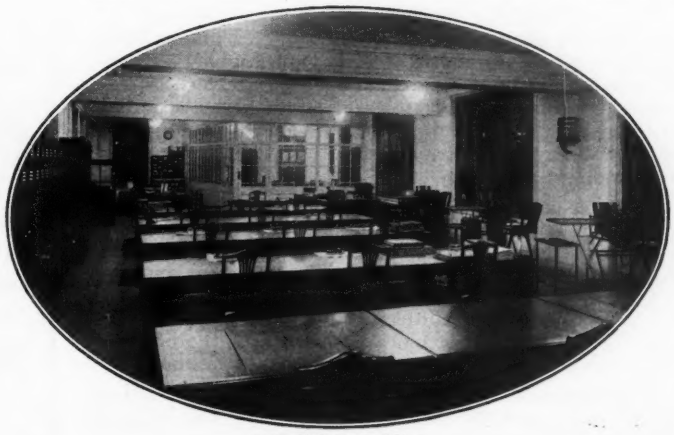
Direct Lighting is a great offender in this respect, unless very carefully planned. The best way of avoiding unsatisfactory results lies in the use of white opal lamps, deep shades, and a close spacing.

Indirect Lighting, although providing almost shadowless illumination without glare, suffers from the serious disadvantage that unless very frequent cleaning is resorted to the fittings lose their efficiency, which at any time is not great, owing to the settlement of dust on the reflecting surfaces within the fittings.

The *Semi-indirect* fitting, with its open translucent bowl, suffers to some extent from the same disadvantage, but the initial efficiency is substantially higher than that of the totally indirect.

The modern *Totally Enclosed Diffusing* fitting suffers little from depreciation due to dust settlement. When properly installed it provides an illumination almost free from shadows, and entirely free from glare, so that from all points of view it is superior to other systems for office lighting of a general character.

It is important in the design of a lighting installation for an office to ensure that the surface brightness of the fitting itself is not too great, and, in general, a figure of 5 candles per square inch should not be exceeded. It often happens that a lamp of high wattage is placed in glassware which is too small, with consequent discomfort



A Well-lighted Office.

Diffusing Fittings in Large Office.

to the employees. The general overhead method of illumination presents a considerable advantage over any other in view of the fact that it is more nearly suitable for any arrangement of the office, so that subsequent rearrangement of desks, etc., can be carried out with the minimum of alteration to the lighting system.

Many managers are peculiarly parsimonious as regards lighting, probably because they do not realize what an extremely small percentage of the total overhead charges, or even rent of the building, will pay for excellent illumination. The tonic effect and the more cheerful atmosphere that is obtained at such a small figure warrants the improvement. Compare the cost of lighting with other commodities. In modern cities it is often the custom to charge for water supply at a percentage of the rateable value of the property. Good lighting is as necessary as water, and as an investment it pays dividends in the form of increased output. In one large block of offices in London it was found that the water rate came to £416 and that the cost of really good electric lighting was £435. Mistakes cost money, and the impossibility of reading figures, due to bad lighting, may be extremely costly.

Moreover, it is not often realized that daylight itself costs a considerable amount. In large city offices where ground is extremely expensive quite a lot of floor space has to be devoted to form a light well, and if only this space was devoted to extra offices the rent obtained would be increased. Strictly speaking, this loss of rent should be debited to the cost of providing daylight. Furthermore, it has been estimated that the provision of windows alone necessitates quite a considerable expense in upkeep as regards cleaning, while, because windows are provided, the cost of heating the building is greater than it would be otherwise owing to the loss of heat through the windows.

The cost of higher intensity lighting does not increase in the same proportion as the intensity of illumination because of the improved efficiency of higher wattage lamps and the proportionate reduction of overhead installation charges. Example: Assume 6 foot-candles to cost £60 per annum, 10 foot-candles would cost approximately £85 per annum, and 12 foot-candles £95 per annum.

MAINTENANCE OF LIGHTING SYSTEM.—In conclusion, attention is directed to the fact that just as it is necessary to keep windows clean in order to let in daylight, so it is essential to clean artificial lighting equipment regularly in order that they shall maintain their efficiency. The totally enclosed glass diffusing units, which are so suitable for the lighting of offices, give by far the best results, since their cost of maintenance is a minimum.

Such enclosed units have become very popular during recent years and the ease with which they can be kept clean is one strong point in their favour.

The Oak Hill Journalists' Home

The attention of journalists and newspaper organizations throughout the country is invited to the Oak Hill Convalescent and Veterans' Home for Journalists, for which the Institute of Journalists is now collecting funds. Oak Hill, a beautifully situated mansion with 21 acres of grounds, was presented for this purpose by Councillor Parkman and is situated near Ipswich. In this matter the Institute acts as a trustee for the whole journalistic profession, all members of which may benefit from this enterprising departure.

An adequate fund of not less than £50,000 is necessary for the maintenance and equipment of the home, and although many generous contributions have been received further help is still needed.

It is anticipated that the official opening of Oak Hill will take place on September 6th, and we hope that before this date the full sum will have been collected.

Contributions to this worthy object may be sent to the Warden, Mr. Geo. Springfield (Oak Hill, Ipswich), who has given much time and effort to the scheme.

Artificial Light and the Avoidance of Glare

We notice that *The Yorkshire Herald* devotes nearly a column to an article on the avoidance of glare, a significant indication of increased public interest in illumination. Attention is drawn to the drawbacks of glare in schools, offices and factories, and the internally frosted lamp is mentioned as the latest effort to secure soft and diffused light. These lamps are now being widely introduced into hospitals, where elimination of glare is naturally of special importance.

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Institution of Public Lighting Engineers

EXHIBITS OF STREET-LIGHTING APPLIANCES.

In our next issue we shall be including an account of the Exhibition of Street Lighting Appliances, which will be on view in the Corn Exchange, Royal Pavilion Buildings, Brighton, in connection with the Conference of the Institution of Public Lighting Engineers.

Data have reached us from a few of the exhibitors. Messrs. Holophane Ltd. are showing a series of prismatic street refractors illustrating the latest developments in directional street lighting. These will include the familiar two-way, three-way and four-way and symmetrical types and special forms for adaptation to existing lanterns. Messrs. Korting & Mathiesen Electrical Ltd. will be exhibiting the new "Safety First" lantern recently described in this journal, and also several of the long-burning enclosed flame arc lamps, embodying the latest improvements (including a visible signal to show when the carbons require renewing). In addition there will be on view various standard lanterns and reflectors, safety couplings, winches, etc. The Engineering and Lighting Equipment Co. Ltd. will be showing a complete range of street-lighting fittings for main and suburban streets, bracket fittings, and water-tight switches and fuse boxes and a new time switch. The London Electric Firm will be exhibiting their well-known lamp-lowering gear, winches, etc., and the Horstmann Gear Co. and Messrs. Venner Time Switches Ltd. will be showing examples of their time switches for automatic control.

The exhibit of the Horstmann Gear Co. Ltd. will comprise all the firm's standard types, including the latest model for suspension gas lamps, which embodies a 15-day-run clockwork movement. Another feature will be a new model electric time switch for public lighting, which is being shown for the first time. In addition to their wide range of electric time switches, Venner Time Switches Ltd. will be showing for the first time a simple and clever form of electrically wound clock of novel design and a special form of electric flasher. The Gas Meter Co. Ltd., are making a special display of their "London" Automatic Clockwork Controller.

Gas lighting will doubtless be well represented in the displays of Messrs. W. Sugg & Co., A. E. Podmore, Falk, Stadelmann & Co., and the Lighting Trades Ltd., and others, and we may expect a representative exhibit of electrical street-lighting lanterns and equipment of all kinds from the British Thomson-Houston Co. Ltd., the General Electric Co. Ltd., Siemens & English Electric Lamp Co. Ltd., Metro-Vick Supplies Ltd., etc.

The list of firms exhibiting is announced as follows: Automatic Light Controller Co. Ltd., Barber & Colman Ltd., British Thomson-Houston Co. Ltd., Cable Accessories Ltd., W. Edgar & Co., Electrical Street Lighting Apparatus Co. Ltd., Engineering and Lighting Equipment Co. Ltd., Falk, Stadelmann & Co. Ltd., Foster & Pullen Ltd., Gas Meter Co., Ltd., General Electric Co. Ltd., Holophane Ltd., Horstmann Gear Co., Lighting Trades Ltd., London Electric Firm, Metropolitan Gas Meter Co. Ltd., Metro-Vick Supplies Ltd., Municipal Supplies Ltd., W. Parkinson & Co., A. E. Pullen Ltd., Gas Meter Co. Ltd., General Electric Co. Podmore & Co., Korting & Mathiesen Electrical Ltd., Siemens and English Electric Lamp Co. Ltd., W. Sugg & Co. Ltd., Venner Time Switches Ltd.

A special opportunity is provided on the programme (from 2 to 5 p.m. on Wednesday, September 14th) for viewing the display.

Women's Engineering Society

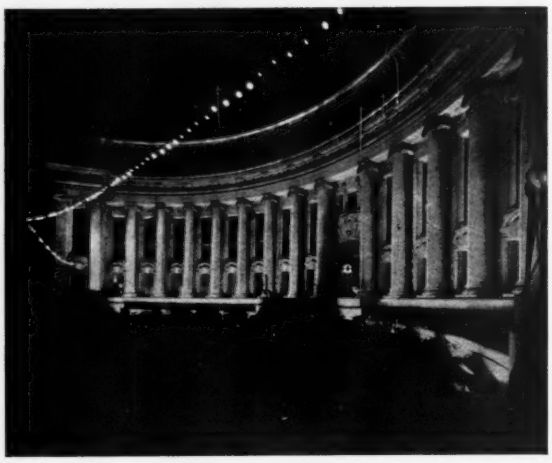
FIFTH ANNUAL CONFERENCE.

We understand that the fifth Annual Conference of Women Engineers will be held at the Shipping, Engineering and Machinery Exhibition at Olympia, London, W., during September 15th to 17th inclusive. The proceedings include an Official Luncheon at Olympia on the opening day and a dinner at the Lyceum Club. The presidential address will be followed by a discussion on "The Relative Importance of Commercial and Technical Engineering under Present-Day Conditions."

Floodlighting of London's County Hall

At the request of the London County Council, the E.L.M.A. Lighting Service Bureau arranged a very striking floodlighting installation at the County Hall, Westminster, on the occasion of a reception held there on Friday evening, August 22nd, by the Chairman of the Council.

The scheme was planned in collaboration with Mr. C. A. Baker, M.I.E.E., Chief Electrical Engineer of the L.C.C., while the floodlighting equipment was loaned by members of the E.L.M.A.



The section of the building which was lighted consisted of the semi-circular members' terrace, which forms the central feature of the water-front of the building; as a result of which the installation presented an imposing spectacle from the opposite side of the river.

The surface lighted possessed an area of roughly 10,000 square feet, and the energy employed in 500-watt and 1,000-watt units totalled 18 kw. The illustration conveys a very real impression of the effect obtained from the members' terrace, and also indicates how readily floodlighting units can be adapted for temporary work of this character.

Sheffield Illumination Society

A most enjoyable time was spent at Derwent and Ashopton on the 13th August by over 50 members and friends of the Sheffield Illumination Society, the visit being favoured with beautiful weather.

The journey was made by motor coach, leaving Sheffield at 12-30 p.m. and arriving at the Derwent Dam about 1-30 p.m. The journey round the Howden and Derwent Dams was very much enjoyed and consisted of some eight or nine miles of lovely scenery.

Permission was very kindly granted by the Derwent Valley Water Works Board for the party to be conducted through the wall of the Derwent Dam, and this proved very interesting and educative.

Leaving the Dams, the party were conveyed to Ashopton. A field was kindly put at our disposal by the proprietor of the Ashopton Inn, and a cricket match was thoroughly enjoyed. The umpires were Mr. W. G. Gillatt (the first President of the Society) and Mr. W. C. Cressey, and it is pleasing to note that they are the two oldest servants of the Corporation Lighting Department.

PERSONAL.

We understand that Mr. H. Talbot, M.I.Chem.E., B.Sc., A.R.C.Sc., General Manager of the Welsbach Light Co. Ltd., has been appointed a delegate of the Society of British Gas Industries to the forthcoming Industrial Commission on Illumination, the meetings of which are being held in Bellagio from the 31st August to the 3rd September, both days inclusive.

Amongst his many other activities, Mr. Talbot for some years, and until quite recently, filled the office of Hon. Secretary of the Chemical Engineering Group of the Society of Chemical Industry, and was a joint Hon. Secretary of the newly formed Fuel Section of the Society.

Lawn Tennis by Artificial Light

Some Notes on the recent "Restlight" Floodlighting Installation at Holland Park

By A CORRESPONDENT

THE application of artificial light to enable lawn tennis to be played by night has been the subject of much discussion. It was, for instance, reviewed in a paper read before the Illuminating Engineering Society in 1921. The problem is rightly regarded as a difficult one technically; whilst from the practical aspect it presents the difficulty that the cost of efficient artificial lighting is apt to prove prohibitive to players of ordinary means.

This last consideration, however, does not apply to special exhibition play—such as that arranged by Mr. C. B. Cochran recently at Holland Park, where Mdlle. Lenglen and other famous professional players were engaged. The chief feature of the artificial lighting on this occasion was the adoption of "Restlight" glass in the scheme undertaken by the Strand Electric and Engineering Co. Ltd. This is possibly the first occasion on which an attempt has been made to imitate the colour of daylight in the lighting of lawn tennis courts. The results were considered very encouraging, and no doubt the experiment will be repeated.

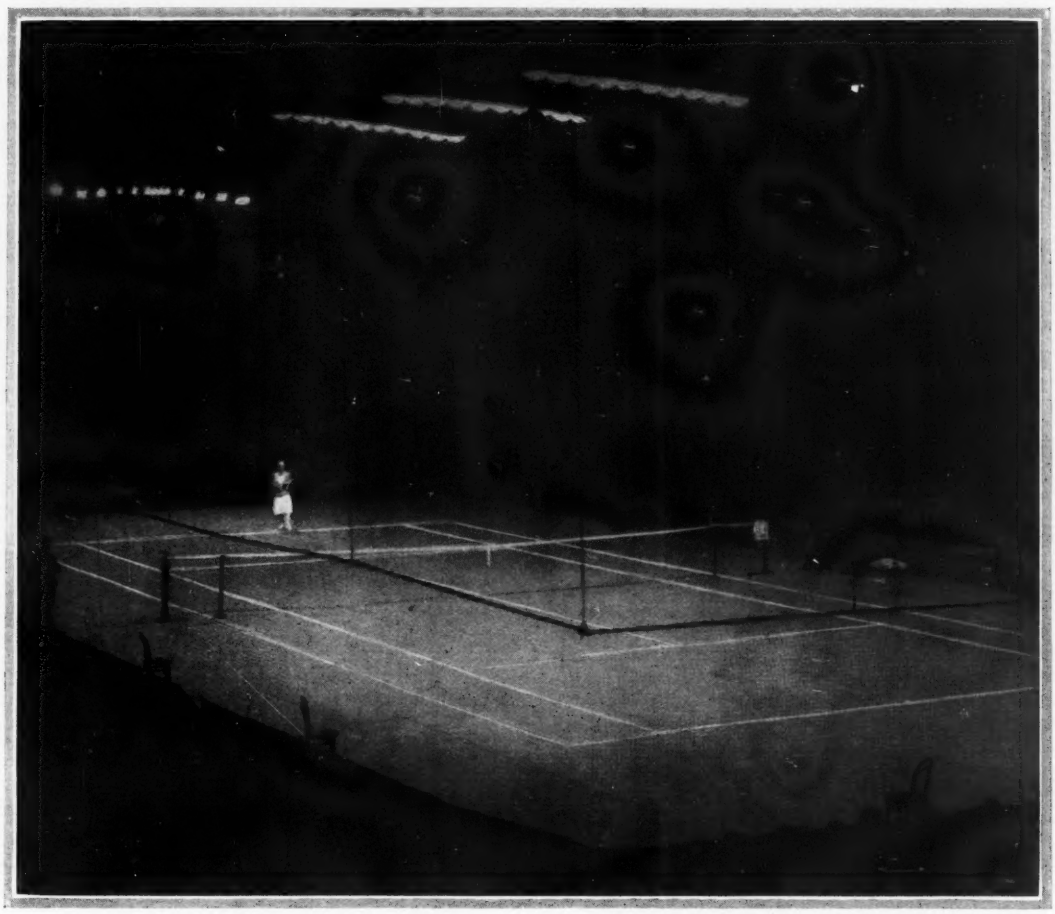


Photo by kind permission of Central Press Photos Ltd.

Holland Park Rink lighted by night for the Professional Matches: Suzanne Lenglen receiving service.
Lighting by The Strand Electric & Engineering Co. Ltd., with "Restlight" Glass Screens in "Sunray" Lanterns.

The installation consisted primarily of 30 "Sunray" arena floodlights with "Restlight" bowl screens, arranged in three rows of 10 each, and 16 feet apart, with the centre row over the net. Each unit contained a 1,000-watt gasfilled electric lamp. Besides these units, two more rows, each consisting of arena floods, four 12-in. "Sunray" square floods, and seven "Sunray" batten floods, were mounted 15 feet behind the base lines. Each of these outer rows utilized two 1,000-watt, four 500-watt and seven 150-watt electric lamps. The total consumption for the entire court was thus 40,100 watts; but this amount might have been diminished if sufficient "Restlight" glass had been available for the utilization of more 12-in. square floods instead of the arena circular types.

The height of suspension of all units was 28 feet above the court—a limit being set by the cross-trusses. However, the height attained was considered sufficient, and the units did not interfere with the play. The illumination obtained was 14 foot-candles at the net, 14½ foot-candles on the side lines as far back as half-way between the service court and the base line, and 8 foot-candles on the base line and the run-back of 15 feet. At the level of the top of the net 22½ foot-candles was obtained; generally speaking, the illumination at a height of three feet above the ground was about 22 foot-candles over three-quarters of the court.

These figures serve to indicate the even illumination secured in view of the very limited time available for the planning of this installation. The whole of the available light was concentrated on the court, which presented the appearance of being lighted by bright sunlight. The flight of the ball could be followed with ease throughout its course by both players and spectators.

The surface of the court consisted of light green drugget canvas stretched tight over the wooden floor, and here an improvement might have been effected if the colour had been a somewhat darker green, as the white lines would then have showed up with better contrast when viewed from the galleries. (When the well-known

yellowing effect of sunlight on grass is remembered, in conjunction with the fact that the colour of "Restlight" closely resembles sunlight, the lightening in tone of the court is easily explicable.)

In spite of the resemblance to sunlight the effect was not in any sense "cold"—showing the material difference between the "Restlight" and the "north light" which can be reproduced for colour-matching purposes.

A comparison with the lighting of other courts would be interesting, but little data of this description appears to be available. It is understood, however, that the indoor courts at Cleveland, U.S.A., which were visited by Mdlle. Lenglen during her recent tour in the United States, are furnished with an evenly distributed illumination of 20 foot-candles at ground level; and that the lamps were mounted somewhat higher than at Holland Park. The fact that, on the whole, a lower illumination sufficed at Holland Park is regarded as an indication of the good visual properties of "Restlight." Mr. Howard Kinsey and Mdlle. Lenglen have expressed themselves very favourably with regard to the method of lighting adopted at Holland Park, attention being drawn to the absence of glare and troublesome shadows, and the ease with which the flight of the ball could be studied. The only criticism made by players, apparently, was that a darker green should have been used for the surface of the court.

Some Impressions of the Advertising Exhibition

Held at Olympia, London, July 18th to 23rd, 1927

By A CORRESPONDENT

The Advertising Exhibition and Convention held in Olympia during July 18th to 23rd must be considered an enterprising departure which attracted an unusually great amount of attention in the press. In this article it is proposed to make a few notes on the exhibition from the standpoint of the illuminating engineer.

Exhibitions are usually of interest from the lighting standpoint. There is often something novel to record, though it must be confessed that one's usual impression is that the possibilities of artificial light as an aid to display have not been fully realized. Light is, however, intimately associated with advertising, and most advertising firms are led to consider its use. Hence the general standard of lighting at the Advertising Exhibition was distinctly higher than at some previous exhibitions one can recall. At many of the stalls there were ingenious luminous devices, concealed lighting was generally practised, and there was little of the glare that has given rise to criticism at exhibitions in the past.

One of the most striking displays noticed by the writer was that in the Palace of Beauty. The division of the space by blue canvas arches, with a glittering constellation of small electric lamps in the centre, was in itself ingenious; and the series of *tableaux vivants* in little alcoves, each devoted to some well-known advertisement or proprietary article, attracted a long queue of spectators. In each case a girl posed as one of the figures of these familiar advertisements. In many cases the picture was a charming one, and the concealed lighting for each exhibit was the more effective by reason of the subdued blue surroundings.

In the neighbouring display of the Empire Marketing Board there were again examples of effective lighting. The combination of cornice lighting with ornamental diffusing lanterns was attractive, and there were numerous pictures of scenes in the British Colonies and Dominions, lighted by concealed lamps, which stood out well. In this section the E.L.M.A. had arranged a small exhibit entitled "Light as a Sales Force," and illustrating concealed illumination with changing coloured light, whilst in the Palace of Beauty the Gas Light & Coke Company was responsible for exhibits illustrating the domestic applications of gas.

Modern concealed lighting was again the dominant method in the series of shop windows in the twenty-one shop fronts of uniform design at the top of the Grand Staircase. A competition in connection with this exhibit was organized, the public being invited to place the displays in order of merit. Certainly in this series of windows a high standard was attained, both as regards novel and striking window dressing and lighting effects. The lighting as a whole was good. If one makes any selection, it would be to call attention to the successful lighting of a jeweller's window, which showed how the requisite degree of sparkle without glare can be attained by modern methods.

In the individual exhibits there was much of interest to the illuminating engineer, several groups of dailies making effective use of light. The pictorial device, "Making a Ship on the Clyde," in connection with a group of Glasgow papers, was a striking poster. *The Sunday Times* had arranged pillars of varying length showing the increase in pages printed year by year, which were illuminated in red by recessed lamps in reflectors. *The Daily Sketch* had a large-scale news-sheet printed on muslin, which, by means of automatic switching, was caused to fade and reappear. The London School of Printing utilized "Restlight" exclusively on their stall, the general lighting by the standard bowls being supplemented by well-screened local units. Many exhibitors made effective use of illuminated signs and transparencies, etc. One of the most effective of all, in the writer's opinion, was a small recessed picture, "The Glory of the Garden," in which illuminated butterflies fluttered above flower beds.

Stalls devoted exclusively to illuminated signs were also in evidence. Amongst these one might mention the displays of "Mur-Ray" Signs Ltd., "Halo" signs, the New Roto Sign Co. Ltd., and the "Solaflex" signs —the latter the ingenious and original sign based entirely on the use of daylight, to which reference was recently made in the columns of *The Illuminating Engineer*.

This is just one criticism that might be made—one would have liked the possibilities of floodlighting, especially as a supplement to the modern poster, more fully emphasized at this exhibition. It is true that floodlighting entered to some degree into numerous exhibits. But a demonstration of floodlighting *per se*, on a large scale, would have been a useful feature.

Legal Aspects of Electric Signs

It is well known that in the installation of electric signs the design and equipment of a suitable device is only half the battle, and that the satisfying of legal requirements is sometimes almost equally important. Compliance with local regulations often requires much patience and perseverance. In addition there are the problems raised by the rights of the landlord of the premises and the wording of the lease. Some of these points were recently discussed by Mr. W. E. Jackson in a contribution to *The Electrical Review*. A common clause often forbids tenants to do any act which may cause annoyance; in judging whether an illuminated sign is a nuisance much depends on the class of property and the neighbourhood. In America, where advertising is more intensive than in this country, attempts have been made to attack advertisements on the ground that their glaring and brilliant effect cancels the appeal of adjoining advertisements. But in this country the principle seems to be established that, even if someone devises a display so brilliant and striking as to put everyone else's displays in the shade, he is still within his legal rights provided he acts within the necessary and reasonable limits of his business and is not "malicious."

The regulations affecting electric signs in this country are varied and complex. As we have previously pointed out some general agreement on what constitutes a nuisance in the sense of undue glare or dazzle would be very useful.

FIG 1.—This laundry has been equipped on the most up-to-date lines with internally heated gas irons and gas-heated ironing machines of various types. The laundry plant is driven by a gas engine, and the artificial lighting is a typical example of the brilliant but soft and even illumination which can be provided by superheated cluster-burner gas lamps at a very low cost.

Smokeless Laundries

IRONING POWER LIGHTING

LAUNDRY proprietors are in increasing numbers appreciating the fact that they can have few better advertisements than a well-lighted laundry in which customers can see the work being done under ideal smokeless conditions.

In some of the various departments of the modern laundry gas appliances are undoubtedly meeting this need most effectively. For the heating of the irons, large and small, and of the various types of ironing machines, no more efficient fuel exists than gas, compressed in a simple form of rotary compressor.

Advantages of the Laundry Gas Iron.—Internally heated high-pressure gas irons are rapidly becoming the standard equipment for laundries. They are provided with air-adjustment devices on the injectors, which are easily regulated to suit any particular quality of gas, and, once set, need never be altered. The irons have nipple orifices of a set size and are supplied with gas at an unvarying pressure. The consumption of gas by the irons is therefore a known factor.

Varying Iron Temperatures.—This does not mean that the iron can be used only at one temperature; for different heats are required with each iron when dealing with different types of work. It is obvious, of course, that a hotter iron is necessary for damp or heavy work than for lighter or drier work. These adjustments of temperature are carried out by the ironers themselves in a very simple manner. Each iron has a special form of

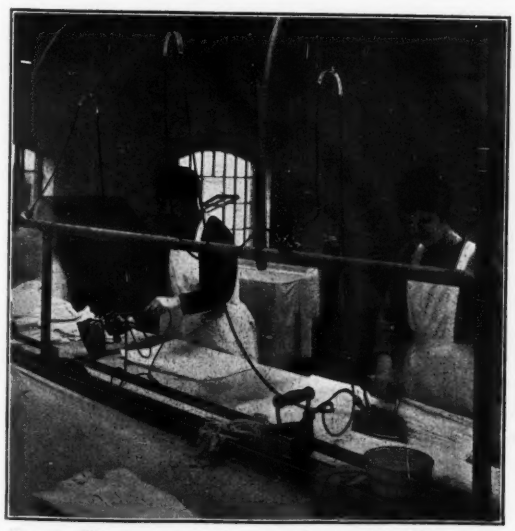


FIG. 2.—This near view of one of the ironing tables to be seen in Fig. 1 shows clearly many of the important details which are fully described in the accompanying notes.

FIG. 3.—Some of the gas-heated ironing machines in the laundry. These machines—which have heavy irons weighing from 60 lbs. to 110 lbs. and are capable of very large outputs of work—are easily controlled by girls.

by-pass and is controlled by a three-position cock which gives at will:

(1) Maximum heat
(2) Moderate heat
(3) Gas shut off.

The turning of the control cock from the "maximum" to the "moderate" heat position cuts down the gas consumption, thus giving a cooler iron. Not only is the gas consumption cut down, however; the air supply is also automatically adjusted, so that at all times the gas and air mixture is properly balanced to give the highest possible efficiency. This is a great advance on what has hitherto been possible.

Economy of the Gas Iron.—It follows, of course, that these different controls result in considerable economies, since the same iron, adaptable at a moment's notice to different classes of work, consumes only the minimum amount necessary for each particular operation.

Compressing Plant.—The machine for compressing the gas for the irons is very small and compact. A compressor capable of serving up to thirty-three 8 lb. hand-irons occupies an area 15 inches long by 8½ inches wide and requires only a quarter brake-horse power to drive it.

A Model Installation.—A description of a fairly large laundry equipped on quite modern lines will perhaps be the mast advantageous method of bringing out the practical points to be considered in fitting up a laundry.

Fig. 1 shows part of the ironing room of a laundry in which 25 high-pressure internally heated gas irons are used for "hand-ironing" work. These are fixed, four on each side, on double ironing tables. Fig. 2 shows a close view of a portion of one of the tables, and gives a good idea of the manner in which they are arranged.

Model Equipment for Ironing Tables.—The gas supply pipe for the eight irons is raised about 20 inches above the centre of the table, and runs along its whole length. To this pipe are clamped curved iron supports, slightly flexible, rising 3 ft. 6 in. above the pipe. From these supports are suspended chains carrying saddles through which are threaded the rubber tubes connecting the irons to the gas supply pipe. By their curved formation, the iron supports hold the rubber tubes approximately above the working points of the ironers. In consequence there is no necessity to have any superfluous rubber tubing on the ironing board, which is thus left entirely free of obstacles. The system of suspension,

FIG. 5.—A section of the laundry of the Royal Free Hospital, Gray's Inn Road, London, in which the whole of the hospital's laundry work for patients and for the hospital staff is carried out. From 22,000 to 23,000 pieces are dealt with every week. The laundry is lighted by gas, and the gas equipment for ironing consists of six high-pressure gas irons and a gas-heated collar machine.

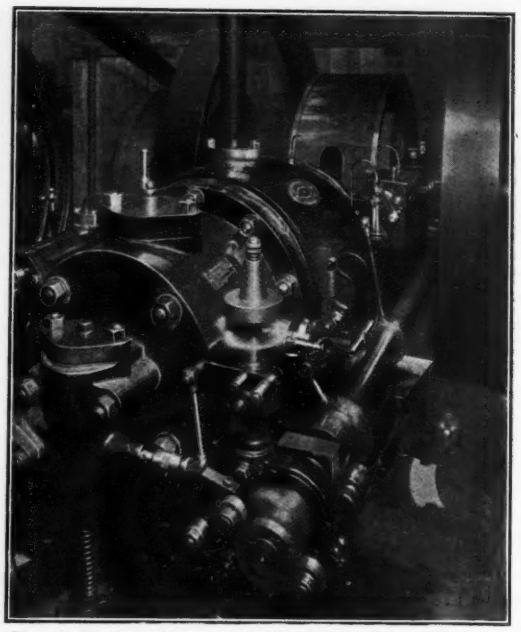


FIG. 4.—For over 30 years gas has been used to drive the plant in the laundry. During the whole of this time no stoppage of the work has ever been caused by a failure of the power plant—truly a splendid record.

too, permits of the iron being used over a considerable length of ironing space. This saves the time and energy of the ironer, as she is able to iron large garments without having to move them along the board. The control cock for each iron is fixed on the gas supply rail, at the point to which the rubber tubing to the iron leaves the rail, and can be reached easily by the ironer whenever she desires to vary the heat of the iron. The handle on the control tab is of a reasonable length to permit of its easy turning.

Fatigue-saving Details.—For the lighting up of the irons, each double ironing table is provided with two pilot lights, fixed at the end of four feet of rubber tube. Any one of the eight women working on the table can pick up one of these two pilot lights without moving from her working position. Even more important, from the point of view of elimination of unnecessary fatigue, is the fact that there is no necessity to lift the iron from the table in order to bring it into contact with the pilot light.

Iron Rests.—Another detail of interest is the rest for the irons when they are not in use. In many laundries a small cast-iron stand not much larger than the iron itself is fixed on the ironing board. The placing of the iron on to this stand involves a visual and accurate physical effort to make sure that the iron rests on the small surface provided. A glance at Fig. 2 will show that, instead of the small stand, an iron rack (raised only slightly above, and running the whole length of the table) is provided. With this arrangement the iron can be rested at the point nearest to the spot at which the last ironing movement was completed, and the action of placing it on the rack becomes, after a short time, purely an instinctive one involving no mental or visual effort. The ironing board is, moreover, left completely free for ironing work.

These points may appear on first thoughts to be comparatively small and unimportant; but it must be remembered that even a slight increase in the output (or reduction in fatigue) of each worker may have quite an important value when considered in relation to the large number of ironers engaged on the work.

Ironing Machines.—Fig. 3 is a view of another section of the same laundry, and shows some of seven ironing machines which are quite the "last word" in efficiency.

This type of ironer is destined in time to take the place of most of the steam presses. The machines are made with three weights of irons, namely, 60 lbs., 90 lbs. and 110 lbs.

As will be seen on reference to the illustration, these very heavy irons are easily operated by girls, because the power required for lifting and moving them is mechanical. The girls control them by the upward and downward movement of a lever handle attached to the side of the iron.

Important Advantages.—Some of the other important advantages of this gas-heated ironing machine may be summarized briefly as follows:—

1. The first cost of the machine is less than that of a steam press.
2. The cost of upkeep is small, the mechanism being quite simple.
3. No leaky steam joints require attention.
4. The floor space occupied by the machine is only 7 ft. by 2 ft. 4 in.—a remarkably small area in proportion to the output of work of which it is capable.
5. The simplicity of the machine is such that a new hand can, within a very short space of time, become quite proficient.

These irons, though so weighty, are under such perfect control and are so gentle in action that they are used for ironing out some of the most delicate silk and lace articles sent to the laundry.

Different Iron Temperatures.—The irons shown in Fig. 3 are internally heated by high-pressure gas, and are fitted with controls (giving "maximum" and "moderate" heats and "gas shut off") similar to those provided on the hand-irons already described.

Gas for Power.—The plant which requires to be mechanically driven in this laundry consists of the following:—

4 Hydros	1 Neck bander
8 Washing machines	1 Gofferer
1 Drier	1 Collar shaper
3 Calenders	1 Gas compressor
7 Ironing machines	1 Ventilating fan.
6 Collar machines	

FIG. 6.—Part of the ironing room of a particularly up-to-date small laundry, showing the eight internally heated high-pressure gas irons in use.

Power for this purpose is provided by the 45 b.h.p. gas engine shown in Fig. 4.

When this laundry first started in a small way some 30 odd years ago, a 5 b.h.p. gas engine supplied all the power necessary. Since then a 15 b.h.p. gas engine was installed, to be superseded later by a 30 b.h.p. engine, which in turn was replaced (about two years ago) by a 45 b.h.p. gas engine.

No Breakdown for Thirty Years.—During the whole of this period of 30 years the laundry has never had to stop work on account of a breakdown of the power plant—truly a remarkable proof of the reliability of gas for power.

Gas for Lighting.—The artificial lighting of this laundry is also dependent on gas, 28 superheated gas lamps, containing clusters of two, three or four mantles, comprising the installation throughout the entire laundry. Some idea of the excellent illumination provided by these lamps can be gained by a glance at Fig. 1. This illustration is reproduced from an "untouched" photograph taken at night time. Every detail on the ironing boards and ironing machines is adequately and evenly illuminated, with the result that the output of the ironers during the dark months of the year is equal to that attained during the summer months when artificial light is not required.

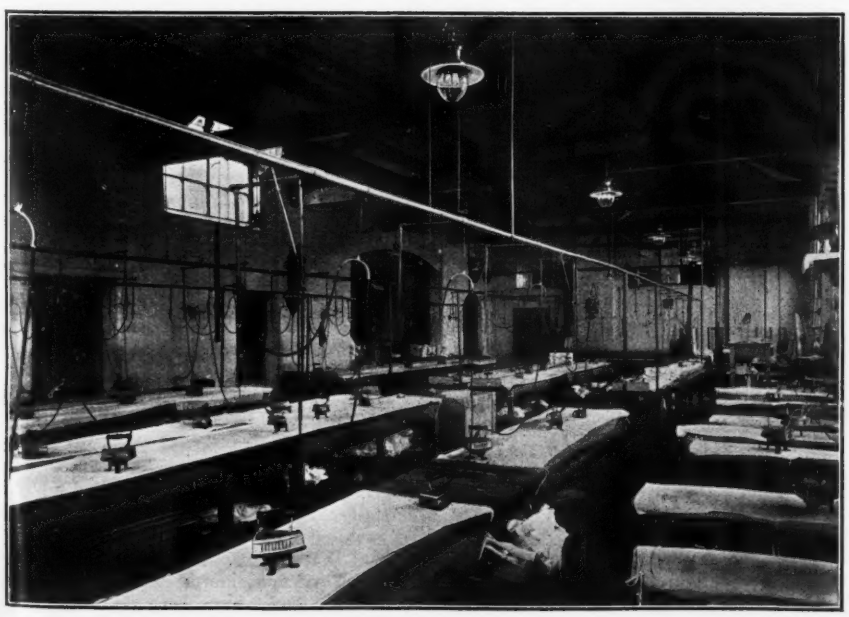


FIG. 7.—Part of a large installation of high-pressure gas irons in the laundry of the Convent of the Good Shepherd, Blackley, Manchester. The hand-ironing equipment consists of six 6 lb. irons, twenty-six 8 lb. irons, thirty 10 lb. irons, and ten 12 lb. irons—72 in all. The belt-driven compressor for increasing the pressure of the gas is capable of compressing up to 1,000 cubic feet of gas per hour. The laundry is beautifully lighted at night time by modern gas lamps of high efficiency.

TRADE NOTES & ANNOUNCEMENTS

CONCEALED LIGHTING AT THE MAY FAIR HOTEL.

The Ballroom in the May Fair Hotel (Fig. 1) is a striking example of concealed lighting, effected from the cornice round the ceiling and lights at the bases of three handsome domes. Each dome is further equipped with six G.E.C. floodlights equipped with 500 w. and 200 w. Osram lamps, for the purpose of floodlighting from above and through the domes. Cornice and dome lighting are likewise used in the reception rooms, where, however, supplementary ornamental fittings are provided.

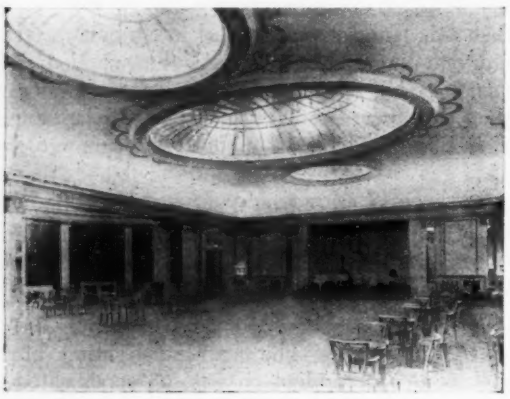


FIG. 1.—C.E.G. Concealed Ballroom Lighting, May Fair Hotel, Berkeley Street, London W.

The garden grill (Fig. 2) is lighted by 60 w. Osram gasfilled lamps equipped with colour screens enabling noonday sunshine, evening twilight or pale moonlight to be imitated. The garden grill and garden grill lounge are designed on rose bowery lines with pink roses climbing up the walls and across the ceiling, which forms a panoramic scene of blue sky and fleecy clouds, effectively revealed by the concealed cornice lighting.

FIG. 2.—Garden Grill Restaurant, May Fair Hotel. Illuminated by G.E.C. Mirrored Reflectors and Osram Lamps.

In the ballroom the lighting may be supplemented when required by special spotlights and floodlighting units. Each of the three main entrance porticos is illuminated by a large number of Osram 14 v. 7 w. sign type lamps. The whole scheme is a striking instance of effective combination of the lighting scheme with the decoration. In all 10,000 Osram lamps are used in this installation, which was carried out by Messrs. V. G. Middleton & Co. Ltd., under the direction of Mr. V. C. Hardy, the chief engineer of the Gordon Hotels circuit, and Major C. E. Muggeridge.

X-RAY LIGHTING AT THE ADVERTISING EXHIBITION.

Model Shop Window lighted by B.T.H. X-Ray Reflectors—Messrs. J. C. Eno's Display at the Advertising Exhibition.

Among the very many exhibits of absorbing interest at Olympia few attracted more attention than the window displays of the group of national advertisers whose products were displayed in the gallery in a series of model shop windows.

Eight of the windows were lighted by means of the familiar B.T.H. X-ray reflectors, and these windows were amongst the most effective of the gallery exhibits.

The beautiful stage lighting effect produced by X-ray reflectors is clearly shown in the photograph—in no way retouched—of Messrs. J. C. Eno's window here reproduced.

Other windows similarly illuminated were those of the Gramophone Co., S. G. Brown Ltd., Furmote, Field & Co., Crosbies, Wix & Sons, and Cotys Ltd.

KORTING & MATHIESEN ELECTRICAL CO. LTD.
(LATE THE PHOTECTOR CO. LTD.)

It is announced that the name of the Photector Co. Ltd. has been changed to **Korting & Mathiesen Electrical Co., Ltd.** There is no change in business policy or management, and the company will continue to specialize in the "Kandem" electricity meters, "Excello" and "Dia" arc lamps, arc lamps for photographic and medical purposes, fittings for commercial and industrial lighting, small transformers, etc., at the same address as before, viz., 711-715, Fulham Road, London, S.W.6.

CONTRACTS CLOSED.

The following contracts are announced :—

MESSRS. SIEMENS AND ENGLISH ELECTRIC LAMP CO. LTD. :

H.M. Office of Works; for 12 months' supply of Siemens Standard Gasfilled and Vacuum Lamps.

The Admiralty; for a large quantity of Siemens helical traction lamps and gasfilled and vacuum type lamps respectively.

Metropolitan Water Board; for the supply of Siemens gasfilled lamps for a period of 12 months.

METRO-VICK SUPPLIES LTD. :

The Admiralty; for "Cosmos" vacuum ordinary traction and gasfilled lamps.

H.M. Office of Works : Part contract for "Cosmos" Tungsten filament vacuum lamps and gasfilled lamps for the period of 12 months from August 1, 1927.

"WOULDN'T IT BE GREAT IF WE COULD ALWAYS PLAY BY SUNLIGHT!"

This is the type of remark one hears at covered-court Tennis and in Badminton Clubs, when the glare of the electric lamps dazzles the server or makes a good player miss an easy smash.

YOU CAN GET SUNLIGHT AT NIGHT

BY INSTALLING

RESTLIGHT-SUNRAY FLOODLIGHTS

AS USED AT HOLLAND PARK, LONDON,
BY

MDLLE. SUZANNE LENGLEN and MR. HOWARD KINSEY.

What Mdlle. Lenglen said:

"The best light I have ever played by. There was no glare and no shadow on the ball."

What Mr. Howard Kinsey said:

"The lighting was a vast improvement on that in the United States—no glare or shadow."

OBTAINABLE FROM

THE STRAND ELECTRIC ENGINEERING CO.

LIMITED,
24, Floral Street, Covent Garden, London, W.C.2

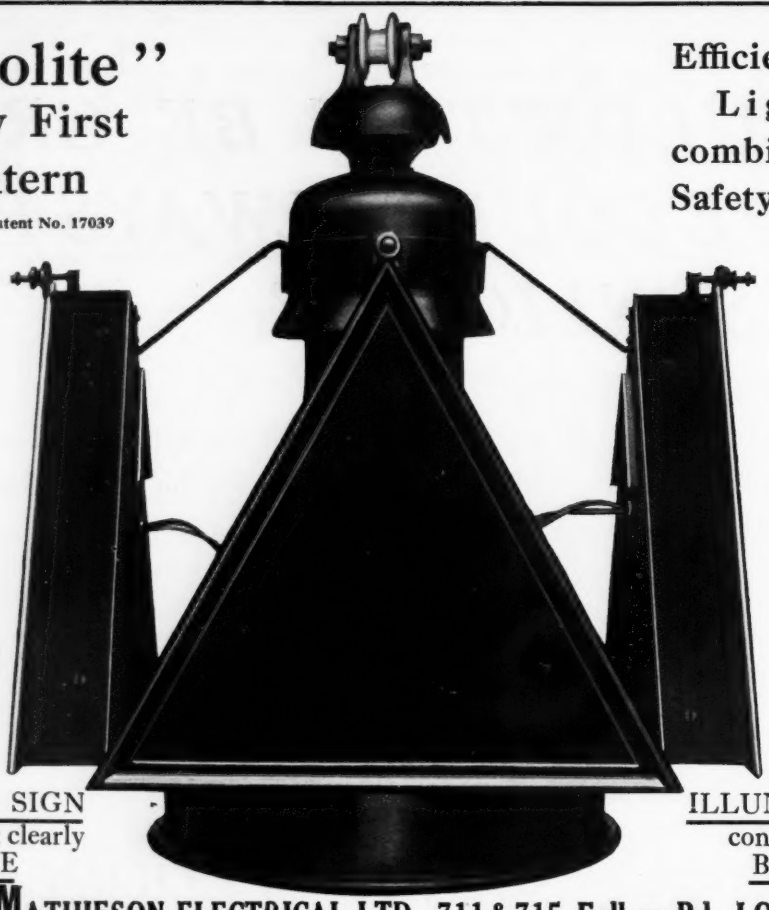
OR FROM

RESTLIGHT LTD., 40, Norfolk Street, London, W.C.2

"Throlite" Safety First Lantern

(Provisional Patent No. 17039

Efficient Street Lighting combined with Safety of Traffic



DANGER SIGN standing out clearly ABOVE

ILLUMINATION concentrated BELOW

KORTING & MATHIESON ELECTRICAL LTD., 711 & 715, Fulham Rd., LONDON, S.W.6
(LATE THE PHOTECTOR CO. LTD.)

INSTITUTION OF PUBLIC LIGHTING ENGINEERS

Fourth Annual Conference & Exhibition at Brighton

SEPTEMBER 12th to 15th, 1927

Visitors to Brighton in connection with the above should not fail to visit our

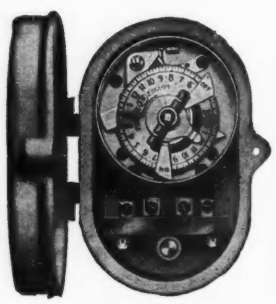
STAND No. 9

at the Exhibition of Lighting Appliances to be held in the Corn Exchange. On this Stand will be found a full range of

NEWBRIDGE GAS CONTROLLERS AND ELECTRIC TIME SWITCHES

TYPE 3 A/UNI
GAS CONTROLLER
15-day run.

NOTE: *A further repeat order is to hand from the South Metropolitan Gas Company for 4,267 Newbridge Gas Controllers.*



TYPE F/4
ELECTRIC TIME SWITCH
2·5 amp. 15-day run.

SOLE MANUFACTURERS :
THE HORSTMANN GEAR COMPANY LTD.
NEWBRIDGE WORKS - - BATH

GRAMS:— "Horstmann, Bath."

'PHONE:— Weston, Bath 19.

WELSBACH DEVELOPMENTS.

On Wednesday, August 17th, a number of representatives of the press had the opportunity of inspecting the showrooms at Welsbach House, and examining new lines of fittings, etc. The Welsbach Light Co. Ltd. has always occupied a somewhat special position as one of the few large firms that deal alike with gas, oil and electric lighting fittings, and in the display all types were well represented. The party were greeted by Mr. H. Talbot, the General Manager, and members of his staff, and by Mr. R. H. Palmer, of Palmer's Publicity Service, who took a considerable amount of trouble in securing for visitors all the information they required.

FIG. 1.—A pleasing type of Opaline Bowl for semi - indirect lighting, with blue decoration.

In the main showroom, which was first visited, gas units are arranged on one side, and electric units on the other; gas and electric radiators and other heating appliances are treated with similar impartiality. The most striking item was undoubtedly the wide range of ornamental diffusing glassware, which was shown in great variety. A typical indirect unit semi-indirect bowl, with a pleasing decoration in blue and on a cream background, is seen in Fig. 1. An illustration in black and white may serve to indicate grace of form, but it can give no impression of the colours. The new Welsbach catalogue which has just reached us contains some charming illustrations in colour of these bowls and shades, and silk shades are similarly treated—an enterprising departure. This glassware represents a great advance on the crude units of a few years ago. This applies alike to gas and electric lighting. The modern designs have the merit of screening the source and diffusing the light, and may in themselves serve as highly decorative objects, the colour schemes being selected to harmonize with the general style of decoration of the room. The application of these shades to gas lighting, in particular, marks a great advance, which was illustrated by the presence of a few of the old clear-glass tinted shades included in the exhibits. We understand that some misguided customers still choose this old type of shade. Therefore firms must stock them. But the demand is dying, and their complete replacement is doubtless only a matter of time.

There were also on view several pleasing types of gas semi-indirect units for which the multiple - mantle inverted burner is specially well adapted.

The display also included many serviceable units of a practical type. Fig. 2 shows a useful form of gas-lighting unit which is noteworthy for the soft diffusion of light and the special arrangements for ventilation.

We also noticed a very practical form of ceiling unit, with white-enamelled gallery and opal glass globe, and very suitable for bathrooms, kitchens, etc.

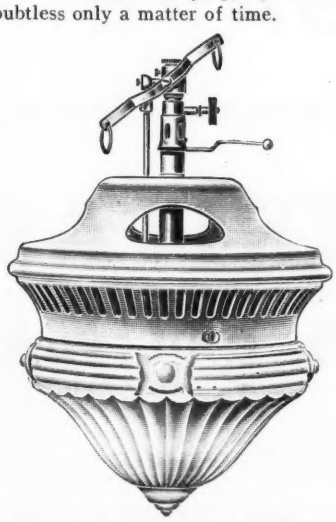
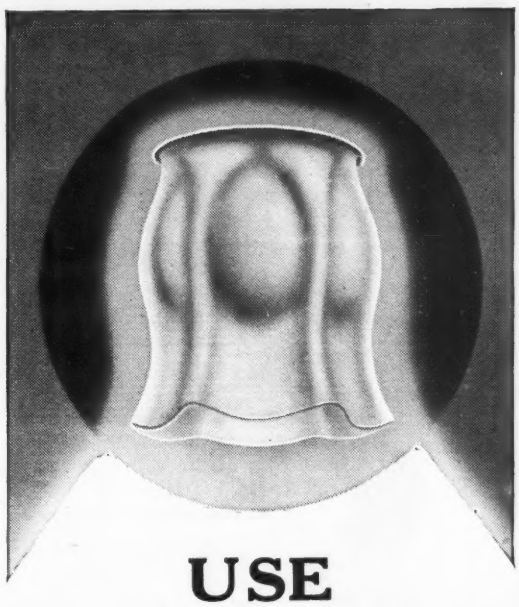


FIG. 2.—A useful type of Three-light Indoor Gas Unit, with the mantle completely screened and very efficient ventilation.

A visit was also paid to a supplementary showroom devoted to the well-known lines of Sunlight incandescent oil lamps and the oil stoves. These oil lamps are made in great variety but with interchangeable parts, and are priced very reasonably. We understand that the export trade in them is very considerable.

After a peep at the well-equipped trade counter at Welsbach House, visitors were entertained to luncheon, over which Mr. H. Talbot presided. All joined in wishing Mr. Talbot a pleasant journey to Bellagio, where he is attending the gathering of the International Illumination Commission.



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Vitreosil

HEAT-PROOF

Gas Globes

Because—

THEY ENSURE THE MAXIMUM LIGHT FROM THE MANTLE

A Vitreosil Globe fits closely round the mantle, so that practically all the heat generated is concentrated in the mantle and converted into light, whereas globes of glass and opal must be so large that they allow much heat to be dissipated in the air.

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(Est. over 20 years)
London Depot: 3 & 4, Old Pye Street, S.W.1
Sole Agents in Australia: Waring, Martin & Harris, 49, Clarence Street, Sydney

When the creators of the new

KELVIN HALL

Glasgow (*recently opened by His Majesty the King*)
came to discuss the all-important question of **LIGHT**

CRYSELCO
"LAMPS"
were specified

Col. Chris Elco of the Cryselco Light Brigade.

CRYSELCO LIMITED, KEMPSTON WORKS, BEDFORD

Telegrams: "CRYSELCO KEMPSTON." *Telephone: BEDFORD 2177*

HOME BRANCHES:

BRIGHTON, 35, Duke Street (Telephone, Brighton 5512).

BIRMINGHAM, 21/22, Newspaper House, 164, Corporation St. (Telephone, Central 3741).

GLASGOW, 23, Douglas Street (Telegrams, "Starter, Glasgow"; Telephone, Central 1253).

BRISTOL, All Saints' Chambers, 41, High Street. (Telephone, Bristol 8039.)

LONDON, Thanet House, 231/2, Strand, W.C.2 (Telegrams, "Cryselco Estrand London"; Telephone, Central 3016/7/8).

NEWCASTLE-ON-TYNE, 27, Grey Street (Telegrams, "Cryselco, Newcastle-on-Tyne"; Telephone, Central 1286).

LEEDS, 11, New Station Street (Telegrams, "Cryselco, Leeds"; Telephone, 27866 Leeds).

MANCHESTER, Douglas Chambers, 63, Corporation Street (Telephone, City 9120).

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The Use of Light for the Examination of Paper

Attention has frequently been drawn in this journal to the many opportunities for well designed local lighting units. One instance recently brought before our notice is the illumination of samples of paper in the paper industry, which may have to pass stringent tests. Both the quality of the paper and the degree of gloss require examination, so that the local unit should be highly adjustable. It should be possible to alter the inclination of the light, and it is of special importance that the illumination should be even and free from streaks and striations. Fig. 1 gives a good idea of the application of a well designed local unit for this purpose. In such cases local illumination has the additional advantage that it aids concentration—the object viewed being the brightest object within the range of the eye.

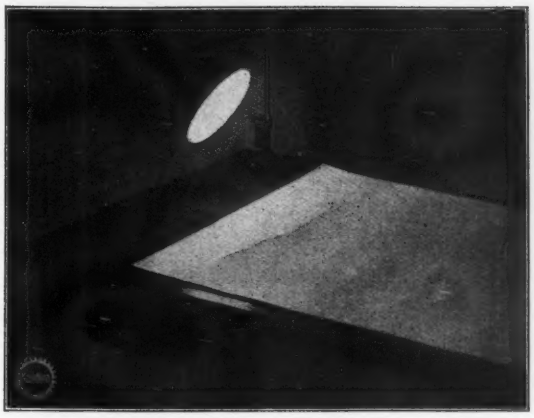

FIG. 1.—Local Unit applied to the examination of paper.

Local units of the type shown above are also very suitable for the lighting of drawing boards. Many draughtsmen prefer local lighting for fine work, and appreciate the ability to alter the position of the light according to the demands of their work. Naturally such units have also many applications for the illumination of special machines in factories.

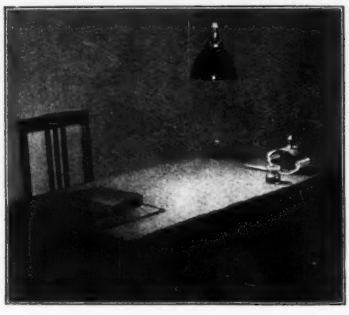

FIG. 2.—Spot of Light under Lamp.

FIG. 3.—Table uniformly illuminated.

The remaining two illustrations show a contrast in desk lighting. One of the chief defects in ordinary desk lighting is the creation of a bright spot and uneven illumination over the desk (Fig. 2). By adopting a well designed reflector and a frosted bulb there is no difficulty in getting even illumination (Fig. 3) free from the streaky effect which is so distracting to the eyes.

For the use of these three interesting illustration we are indebted to Korting & Mathiesen Electrical Ltd., by whom these special local units are supplied in a variety of forms.

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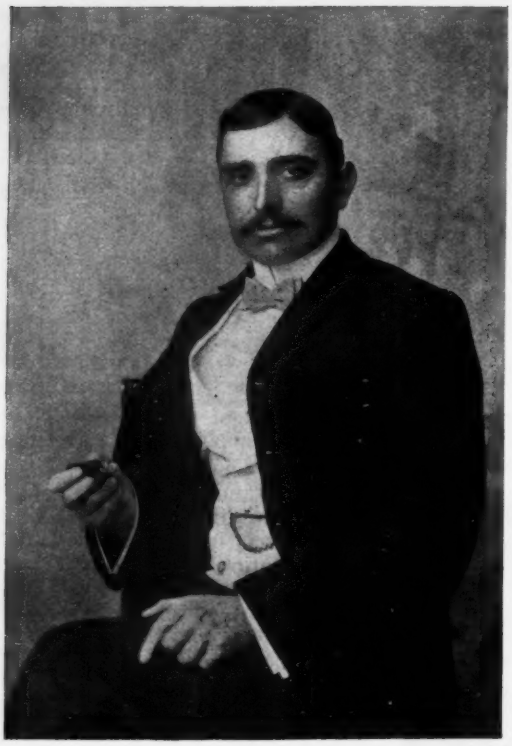
Concealed Lighting at the May Fair Hotel—X-Ray Lighting at the Advertising Exhibition—Welsbach Developments—Mr. A. E. Podmore, etc.

MR. A. E. PODMORE.



In our last issue we recorded with regret the death of Mr. A. E. Podmore, whose portrait appears above. Mr. Podmore, who came of a well-known Birmingham family, deserves to be remembered as a pioneer in gas lighting. For some years he was manager of Messrs. Henry Green and Sons Ltd., but established the business of A. E. Podmore & Co., in Hatton Garden, 30 years ago. He was amongst the earliest to develop the superheated and dustproof burners. Twenty years ago he advocated the use of small mantles, of the type usual to-day. He was also amongst the first to apply inverted burners to street lanterns. The divided gas chamber for superheater lighting of indoor and outdoor suspension lamps and the "Ivex" dustproof burner for domestic use, for which he was responsible, are still in vogue to-day. Such labours were recognized by many of the chief exhibitions concerned with gas lighting.

The business will be carried on by Mr. A. V. Podmore (a nephew of the late Mr. A. E. Podmore), and Mr. A. G. Swift (late founder and managing director of Messrs. Dupree, Swift & Co. Ltd.). It is interesting to note that the electrical side of the business is being further extended and developed.

ADVERTISING ENTERPRISE.

The enterprising Advertisement Judging Competition recently arranged by *The Hardwareman and Ironmonger's Chronicle* seems to have been a great success. The winning advertisement, according to the judgment of readers, was the familiar Welsbach poster, showing the sun eclipsed by a Welsbach inverted mantle, which was certainly striking in effect and ingenious in design. This Welsbach advertisement was designed by Mr. R. H. Palmer, of Palmers Publicity Service Ltd., who, we believe, was also responsible for several other designs which secured favourable mention. It is interesting to note that the third prize was also awarded to an advertisement of a firm prominently associated with lighting, namely, a design containing the well-known "Magnet Girl," for which Mr. H. W. Leonard, of the Publicity Department of the General Electric Co. Ltd., was responsible.

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CHANGE OF NAME.

We are informed that a resolution has been passed changing the name of the above company to SIEMENS ELECTRIC LAMP AND SUPPLIES LIMITED, and that the necessary consent of the Board of Trade has been obtained. The registered office will be at Caxton House, Westminster, as heretofore, and all orders and enquiries should still be sent to the Company at 38-39, Upper Thames Street, London, E.C.4.

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